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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/702,920	05/10/2022	11326276	10859CCC	3577

27752 7590 04/20/2022

THE PROCTER & GAMBLE COMPANY
GLOBAL IP SERVICES
CENTRAL BUILDING, C9
ONE PROCTER AND GAMBLE PLAZA
CINCINNATI, OH 45202

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):

Steven Lee Barnholtz, West Chester, OH;
Paul Dennis Trokhan, Hamilton, OH;
Michael Donald Suer, Cincinnati, OH;
Douglas Jay Barkey, Maineville, OH;
Jonathan Paul Brennan, Cincinnati, OH;

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

The Procter & Gamble Company, Cincinnati, OH;

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.

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

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By fax, send to: (571)-273-2885

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27752 7590 01/26/2022

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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.

Michelle Neabrey	(Typed or printed name)
/Michelle Neabrey/	(Signature)
April 11, 2022	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/702,920	12/04/2019	Steven Lee Barnholtz	10859CCC	3577

TITLE OF INVENTION: Process for Making Fibrous Structures

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	04/26/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
TENTONI, LEO B	1742	264-510000

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/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 C. Brant Cook
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)
The Procter & Gamble Company	Cincinnati, OH

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)*

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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 /C. Brant Cook/ Date April 11, 2022

Typed or printed name C. Brant Cook Registration No. 39151

Electronic Patent Application Fee Transmittal

Application Number:	16702920
Filing Date:	04-Dec-2019
Title of Invention:	Process for Making Fibrous Structures
First Named Inventor/Applicant Name:	Steven Lee Barnholtz
Filer:	Christopher Brant Cook/Michelle Neabrey
Attorney Docket Number:	10859CCC

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:	45444808
Application Number:	16702920
International Application Number:	
Confirmation Number:	3577
Title of Invention:	Process for Making Fibrous Structures
First Named Inventor/Applicant Name:	Steven Lee Barnholtz
Customer Number:	27752
Filer:	Christopher Brant Cook/Michelle Neabrey
Filer Authorized By:	Christopher Brant Cook
Attorney Docket Number:	10859CCC
Receipt Date:	11-APR-2022
Filing Date:	04-DEC-2019
Time Stamp:	15:58:44
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1200
RAM confirmation Number	E20224AF59022970
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	Issue Fee Payment (PTO-85B)	10859CCC-Fee_Transmittalcbc.pdf	309939 df6eefe7881f544ce8d21261cf3498fff9cf1ad6	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	37895 d94478a410f0447865e62d9248a331ee424e747f	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	347834		

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/702,920	12/04/2019	Steven Lee Barnholtz	10859CCC	3577

27752 7590 03/16/2022

THE PROCTER & GAMBLE COMPANY
GLOBAL IP SERVICES
CENTRAL BUILDING, C9
ONE PROCTER AND GAMBLE PLAZA
CINCINNATI, OH 45202

EXAMINER	
TENTONI, LEO B	

ART UNIT	PAPER NUMBER
1742	

NOTIFICATION DATE	DELIVERY MODE
03/16/2022	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):

centraldocket.im@pg.com
mayer.jk@pg.com
pair_pg@firsttofile.com

Response to Rule 312 Communication	Application No.	Applicant(s)	
	16/702,920	Barnholtz et al.	
	Examiner	Art Unit	AIA (FITF) Status
	LEO B TENTONI	1742	No

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

1. ☑ The amendment filed on 08 March 2022 under 37 CFR 1.312 has been considered, and has been:

a) ☐ entered.

b) ☑ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.

Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

f) ☐ not entered because the supplemental or corrected Application Data sheet (ADS)

☐ was not accompanied by a petition to accept an unintentionally delayed claim under 37 CFR 1.55 or 27 CFR 1.78;

☐ did not identify the information being changed in accordance with 37 CFR 1.76(c)(2);

☐ was not properly signed in accordance with 37 CFR 1.76(e) (or 37 CFR 1.33(b) for applications filed prior to September 16, 2012).

/LEO B TENTONI/
Primary Examiner, Art Unit 1742

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	16/702,920
Inventor(s)	:	Steven Lee Barnholtz, et al.
Filed	:	December 4, 2019
Art Unit	:	1742
Examiner	:	Leo B. Tentoni
Docket No.	:	10859CCC
Confirmation No.	:	3577
Customer No.	:	27752
Title	:	Process for Making Fibrous Structures

AMENDMENT AFTER ALLOWANCE UNDER 37 C.F.R. § 1.312

This is in response to the Notice of Allowance mailed January 26, 2022. Applicants respectfully request entry of the amendment presented below.

The Director is hereby authorized to charge all required fees (including any extension of time fees) and to credit any overpayments in this and any concurrent or future correspondence to Deposit Account No. 16-2480.

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

Remarks begin on page 6 of this paper.

OK TO ENTER: /L.B.T/

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	16/702,920
Inventor(s)	:	Steven Lee Barnholtz, et al.
Filed	:	December 4, 2019
Art Unit	:	1742
Examiner	:	Leo B. Tentoni
Docket No.	:	10859CCC
Confirmation No.	:	3577
Customer No.	:	27752
Title	:	Process for Making Fibrous Structures

AMENDMENT AFTER ALLOWANCE UNDER 37 C.F.R. § 1.312

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The Director is hereby authorized to charge all required fees (including any extension of time fees) and to credit any overpayments in this and any concurrent or future correspondence to Deposit Account No. 16-2480.

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

Remarks begin on page 6 of this paper.

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions and listings of the claims in the application.

Listing of Claims

1. (Previously Presented) A process for making a fibrous structure, the process comprising the steps of:

a. providing a die comprising three or more rows of three or more filament-forming holes;

b. supplying at least a first polymer to the die;

c. producing a plurality of filaments comprising the first polymer from the die;

d. combining the filaments with solid additives to form a mixture; and

e. collecting the mixture on a belt to produce a fibrous structure.

2. (Currently Amended) The process according to Claim 1 wherein at least one row of the ~~one~~three or more rows ~~filament-forming holes~~ comprises ~~two~~ten or more filament-forming holes.

3. (Original) The process according to Claim 1 wherein one or more fluid-releasing holes are associated with a filament-forming hole.

4. (Original) The process according to Claim 3 wherein more than one fluid-releasing holes is associated with a filament-forming hole.

5. (Original) The process according to Claim 3 wherein at least one of the one or more fluid-releasing holes is concentrically positioned around one filament-forming hole.

6. (Original) The process according to Claim 1 wherein the first polymer comprises a synthetic polymer.

7. (Original) The process according to Claim 6 wherein the synthetic polymer is selected from the group consisting of: polyvinyl alcohol, polyvinyl alcohol derivatives, polyesters, nylons, polyolefins, polylactic acids, polyhydroxyalkanoates, polycaprolactones and mixtures thereof.

8. (Original) The process according to Claim 7 wherein the synthetic polymer comprises a polyolefin.

9. (Original) The process according to Claim 8 wherein the polyolefin comprises polypropylene.

10. (Original) The process according to Claim 7 wherein the synthetic polymer is selected from the group consisting of: polylactic acids, polyhydroxyalkanoates, polycaprolactones and mixtures thereof.

11. (Original) The process according to Claim 1 wherein the first polymer comprises a natural polymer.

12. (Original) The process according to Claim 11 wherein the natural polymer is selected from the group consisting of: starch, starch derivatives, cellulose, cellulose derivatives, hemicellulose, hemicellulose derivatives and mixtures thereof.

13. (Original) The process according to Claim 1 wherein the solid additives comprise fibers.

14. (Original) The process according to Claim 13 wherein the fibers comprise wood pulp fibers.

15. (Original) The process according to Claim 1 wherein the solid additives are combined with the plurality of filaments by a solid additive spreader.

16. (Original) The process according to Claim 1 wherein the process further comprises the step of:

f. contacting a surface of the fibrous structure with a plurality of filaments comprising a second polymer.

17. (Original) The process according to Claim 16 wherein the plurality of filaments comprising the second polymer are in the form of a second fibrous structure.

18. (Original) The process according to Claim 16 wherein the second polymer is the same as the first polymer.

19. (Previously Presented) The process according to Claim 3 wherein a fluid released by the fluid-releasing holes comprises air.

20. (Original) The process according to Claim 1 wherein the fibrous structure exhibits a pore volume distribution such that greater than about 40% of the total pore volume present in the fibrous structure exists in pores of radii of from about 121μm to about 200μm.

21. (Original) The process according to Claim 1 wherein the process further comprises the step of subjecting the fibrous structure to a thermal bonding operation.

22. (Original) The process according to Claim 1 wherein the process is directly coupled to a post-processing operation.

23. (Original) The process according to Claim 1 wherein the process is closely coupled to a post-processing operation.

24. (Previously Presented) A process for making a fibrous structure, the process comprising the steps of:

a. providing a die comprising three or more rows of three or more filament-forming holes;

b. supplying a polyolefin polymer to the die;

c. producing a plurality of filaments comprising the polyolefin polymer from the die;

d. combining the filaments with wood pulp fibers to form a mixture; and

e. collecting the mixture on a belt to produce a fibrous structure.

REMARKS

Claim Status

Applicants acknowledge the allowance of the claims of the present application.

Claim 2 has been amended to correct a grammatical error with respect to the number of filament-forming holes in order to be consistent with Claim 1 as allowed. Support for this amendment is found in the Specification at Page 17, lines 17-18.

Claims 1-24 are pending in the present application. No additional claims fee is believed to be due.

CONCLUSION

This response represents an earnest effort to place the allowed claims in proper form. In view of the foregoing, the Applicant respectfully requests the Examiner to enter the amendment presented herein.

Respectfully submitted,
THE PROCTER & GAMBLE COMPANY

By /C. Brant Cook/
C. Brant Cook
Registration No. 39,151
(513) 884-4932

Date: March 8, 2022
Customer No. 27752

Electronic Acknowledgement Receipt

EFS ID:	45170332
Application Number:	16702920
International Application Number:	
Confirmation Number:	3577
Title of Invention:	Process for Making Fibrous Structures
First Named Inventor/Applicant Name:	Steven Lee Barnholtz
Customer Number:	27752
Filer:	Christopher Brant Cook/Michelle Neabrey
Filer Authorized By:	Christopher Brant Cook
Attorney Docket Number:	10859CCC
Receipt Date:	08-MAR-2022
Filing Date:	04-DEC-2019
Time Stamp:	11:29:22
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		10859CCC-Amendment_After_Allowance.pdf	33059 7107da36bb159ac1be4be1dcdc07183d148e447d	yes	6

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment after Notice of Allowance (Rule 312)	1	1
	Claims	2	5
	Applicant Arguments/Remarks Made in an Amendment	6	6
Warnings:			
Information:			
	Total Files Size (in bytes):	33059	

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New Applications Under 35 U.S.C. 111

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

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

New International Application Filed with the USPTO as a Receiving Office

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

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NOTICE OF ALLOWANCE AND FEE(S) DUE

27752 7590 01/26/2022

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CINCINNATI, OH 45202

EXAMINER
TENTONI, LEO B

ART UNIT	PAPER NUMBER
1742	

DATE MAILED: 01/26/2022

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/702,920	12/04/2019	Steven Lee Barnholtz	10859CCC	3577

TITLE OF INVENTION: Process for Making Fibrous Structures

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	04/26/2022

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.

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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. 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

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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)

27752 7590 01/26/2022

THE PROCTER & GAMBLE COMPANY
GLOBAL IP SERVICES
CENTRAL BUILDING, C9
ONE PROCTER AND GAMBLE PLAZA
CINCINNATI, OH 45202

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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.
16/702,920	12/04/2019	Steven Lee Barnholtz	10859CCC	3577

TITLE OF INVENTION: Process for Making Fibrous Structures

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	04/26/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
TENTONI, LEO B	1742	264-510000

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/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
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. _____

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/702,920	12/04/2019	Steven Lee Barnholtz	10859CCC	3577

27752 7590 01/26/2022

THE PROCTER & GAMBLE COMPANY
GLOBAL IP SERVICES
CENTRAL BUILDING, C9
ONE PROCTER AND GAMBLE PLAZA
CINCINNATI, OH 45202

EXAMINER	
TENTONI, LEO B	
ART UNIT	**PAPER NUMBER**
1742	

DATE MAILED: 01/26/2022

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. 16/702,920	Applicant(s) Barnholtz et al.	
	Examiner LEO B TENTONI	Art Unit 1742	AIA (FITF) Status No

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

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to amendment-after-final of 07 January 2022.
   ☐ 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 1-24 . 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)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/LEO B TENTONI/
Primary Examiner, Art Unit 1742

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/702,920	Barnholtz et al.
	Examiner	Art Unit
	LEO B TENTONI	1742

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

CLAIMS

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☑ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	01/13/2022								
1	1	=								
2	2	=								
3	3	=								
4	4	=								
5	5	=								
6	6	=								
7	7	=								
8	8	=								
9	9	=								
10	10	=								
11	11	=								
12	12	=								
13	13	=								
14	14	=								
15	15	=								
16	16	=								
17	17	=								
18	18	=								
19	19	=								
20	20	=								
21	21	=								
22	22	=								
23	23	=								
24	24	=								

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/702,920	Barnholtz et al.
	Examiner	Art Unit
	LEO B TENTONI	1742

CPC - Searched*		
Symbol	**Date**	**Examiner**
B32B 37/20, 37/203	01/04/2021	LBT
D01D 5/08, 5/0985, 7/00, 10/02	01/04/2021	LBT
D01F 6/04, 6/06, 6/14, 6/60, 6/62, 6/625	01/04/2021	LBT
D04H 1/26, 1/4291, 1/4309, 1/4334, 1/435, 1/56, 3/007, 3/009, 3/011, 3/015, 3/16, 5/06	01/04/2021	LBT
D10B 2201/22, 2321/02, 2321/022, 2321/06, 2331/02, 2331/04, 2331/041	01/04/2021	LBT
ABOVE UPDATED	04/13/2021	LBT
ABOVE UPDATED	07/06/2021	LBT
ABOVE UPDATED	11/02/2021	LBT
ABOVE UPDATED	01/13/2022	LBT

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**
264	131, 171.1, 211.12, 555	01/04/2021	LBT
156	167, 244.11, 324	01/04/2021	LBT

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

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/702,920	Barnholtz et al.
	Examiner	Art Unit
	LEO B TENTONI	1742

Search Notes		
Search Notes	**Date**	**Examiner**
CHECKED PARENT AND PROVISIONAL APPLICATIONS	01/04/2021	LBT
INVENTOR NAME SEARCH	01/04/2021	LBT

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**
264	131, 171.1, 211.12, 555	01/13/2022	LBT
156	167, 244.11, 324	01/13/2022	LBT
B32B	37/20, 37/203	01/13/2022	LBT
D01D	5/08, 5/0985, 7/00, 10/02	`01/13/2022	LBT
D01F	6/04, 6/06, 6/14, 6/60, 6/62, 6/625	01/13/2022	LBT
D04H	1/26, 1/4291, 1/4309, 1/4334, 1/435, 1/56, 3/007, 3/009, 3/011, 3/015, 3/16, 5/06	01/13/2022	LBT
D10B	2201/22, 2321/02, 2321/022, 2321/06, 2331/02, 2331/04, 2331/041	01/13/2022	LBT

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/702,920	Barnholtz et al.
	Examiner	**Art Unit**
	LEO B TENTONI	1742

CPC						
Symbol					**Type**	**Version**
D01D	/	5	/	0985	F	2013-01-01
B32B	/	5	/	022	I	2013-01-01
D04H	/	1	/	565	I	2013-01-01
D04H	/	1	/	56	I	2013-01-01
D04H	/	5	/	06	I	2013-01-01
B32B	/	37	/	203	I	2013-01-01
D01F	/	6	/	625	I	2013-01-01
D04H	/	3	/	16	I	2013-01-01
D04H	/	1	/	425	I	2013-01-01
D04H	/	1	/	4291	I	2013-01-01
D10B	/	2321	/	022	A	2013-01-01
D10B	/	2331	/	04	A	2013-01-01
D10B	/	2331	/	041	A	2013-01-01
D10B	/	2201	/	22	A	2013-01-01
D10B	/	2331	/	02	A	2013-01-01
D10B	/	2321	/	06	A	2013-01-01
D10B	/	2321	/	02	A	2013-01-01
D10B	/	2401	/	12	A	2013-01-01
D10B	/	2509	/	026	A	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	24	
/LEO B TENTONI/ Primary Examiner, Art Unit 1742	13 January 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	10

U.S. Patent and Trademark Office

Part of Paper No.: 20220113

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/702,920	Barnholtz et al.
	Examiner	**Art Unit**
	LEO B TENTONI	1742

INTERNATIONAL CLASSIFICATION				
CLAIMED				
B32B	/	37	/	20
D01D	/	5	/	08
D01D	/	7	/	00
D01D	/	10	/	02
D01F	/	6	/	04
D01F	/	6	/	06
D01F	/	6	/	14
D01F	/	6	/	60
D01F	/	6	/	62
D04H	/	1	/	26
D04H	/	1	/	4309
D04H	/	1	/	4334
D04H	/	1	/	435
D04H	/	3	/	007
D04H	/	3	/	009
D04H	/	3	/	011
D04H	/	3	/	015

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**
264	555

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					
156	167	244.11	324			
264	131	171.1	211.12			

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 24	
/LEO B TENTONI/ Primary Examiner, Art Unit 1742 (Primary Examiner)	13 January 2022 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 10

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/702,920	Barnholtz et al.
	Examiner	**Art Unit**
	LEO B TENTONI	1742

☑ 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	10	19	19										
2	2	11	11	20	20										
3	3	12	12	21	21										
4	4	13	13	22	22										
5	5	14	14	23	23										
6	6	15	15	24	24										
7	7	16	16												
8	8	17	17												
9	9	18	18												

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	24	
/LEO B TENTONI/ Primary Examiner, Art Unit 1742	13 January 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	10

U.S. Patent and Trademark Office

Part of Paper No.: 20220113

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	16/702,920
Inventor(s)	:	Steven Lee Barnholtz, et al.
Filed	:	December 4, 2019
Art Unit	:	1742
Examiner	:	Leo B. Tentoni
Docket No.	:	10859CCC
Confirmation No.	:	3577
Customer No.	:	27752
Title	:	Process for Making Fibrous Structures

REPLY AFTER FINAL

This is in response to the Office Action of November 9, 2021. Please consider the following remarks and reconsider the application.

The Director is hereby authorized to charge all required fees (including any extension of time fees) and to credit any overpayments in this and any concurrent or future correspondence to Deposit Account No. 16-2480.

Remarks begin on page 2 of this paper.

OK TO ENTER: /L.B.T/

Electronic Acknowledgement Receipt

EFS ID:	44693103
Application Number:	16702920
International Application Number:	
Confirmation Number:	3577
Title of Invention:	Process for Making Fibrous Structures
First Named Inventor/Applicant Name:	Steven Lee Barnholtz
Customer Number:	27752
Filer:	Christopher Brant Cook/Michelle Neabrey
Filer Authorized By:	Christopher Brant Cook
Attorney Docket Number:	10859CCC
Receipt Date:	07-JAN-2022
Filing Date:	04-DEC-2019
Time Stamp:	12:39:31
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	Response After Final Action	10859CCCReplyAfterFinal.pdf	34164 40b1f4d8bb2fc6769e0fab37e2c2c2b75c5168ca	no	5

Warnings:

Information:	
Total Files Size (in bytes):	34164

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	16/702,920
Inventor(s)	:	Steven Lee Barnholtz, et al.
Filed	:	December 4, 2019
Art Unit	:	1742
Examiner	:	Leo B. Tentoni
Docket No.	:	10859CCC
Confirmation No.	:	3577
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Remarks begin on page 2 of this paper.

REMARKS

Claim Status

Claims 1-24 are pending in the present application. No additional claims fee is believed to be due.

Rejections Under 35 USC 103

Claims 1-7, 13-15, 19 and 21 are rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Pomplun, et al. (U.S. Patent 5,948,710 A) ("Pomplun") in combination with Schwarz (U.S. Patent 5,476,616 A) ("Schwarz"). The Examiner asserts that Schwarz teaches a die that utilizes converging air flows to entrain and attenuate its threads and cites Schwarz's Col. 1, lines 20-28 (particularly Col. 1, line 25) and Col. 2, lines 15-52 (particularly Col. 2, lines 39-41).

Applicants respectfully submit that contrary to the Examiner's assertion, Schwarz does not teach a die that utilizes converging air flows to entrain and attenuation its threads. Schwarz's Col. 1, lines 20-28 recites the following:

> It is an object of the present invention to increase the productivity of a melt-blowing spinnerette of multiple rows of spinning orifices by uniformly directing streams of gas to each row of spinning orifices.
>
> Another object of the invention is to provide a uniform stream of attenuating gas around each spinning nozzle by centering the nozzles in round holes of gas cover plates to achieve an even gas flow around the circumference of each nozzle.

Applicants respectfully submit that nowhere in the above language of Schwarz does it teach that Schwarz's threads exiting its spinning nozzles are entrained and attenuated by converging air flows. Rather, Applicants respectfully submit that the above language teaches that Schwarz's threads exiting its spinning nozzles are attenuated by a uniform stream of attenuating gas around each spinning nozzle by centering the nozzles in round

holes of gas cover plates to achieve an even gas flow around the circumference of each nozzle, which does not result in converging air flows that entrain and attenuate Schwarz's threads that exit its spinning nozzles.

In light of the foregoing, Applicants respectfully submit that the teachings of Pomplun and Schwarz cannot properly be combined to achieve the claimed invention. Applicants respectfully submit that Pomplun in view of Schwarz fails to teach each and every element of Claim 1, the independent claim, as amended, because the teachings of Pomplun in view of Schwarz cannot properly be combined to arrive at the claimed invention as claimed in Claim 1, as amended. Applicants respectfully submit that Pomplun teaches a die, as shown in its drawings, that comprises a single row of filament-forming holes, not three or more rows of three or more filament-forming holes, wherein two streams of usually heated attenuating gas converge to form a single stream of gas which entrains and attenuates the molten threads of water-degradable polymer, as the threads exit small the filament-forming holes. Applicants respectfully submit that nowhere does Pomplun teach or suggest a die that contains three or more rows of three or more filament-forming holes where the attenuation air does not converge. Applicants respectfully submit that Pomplun teaches the importance of the converging gas streams to entrain and attenuate its threads. Therefore, Applicants respectfully submit that there is no teaching, suggestion or motivation to modify Pomplun process by replacing Pomplun's die with Schwarz's die. Applicants respectfully submit that Schwarz fails to recognize and/or teach and in fact teaches away from a die that utilizes converging air flows to entrain and attenuate its threads. Therefore, Applicants respectfully submit that the teachings of Pomplun and Schwarz cannot properly be combined to substitute Schwarz's die for Pomplun's die to achieve the claimed invention as claimed in Claim 1, as amended. Accordingly, Applicants respectfully submit that Claim 1, as amended, is not rendered obvious over Pomplun in view of Schwarz. MPEP 2143.03. Further, Applicants respectfully submit that Claims 2-7, 13-15, 19 and 21, which ultimately depend from Claim 1, as amended, are not rendered obvious over Pomplun in view of Schwarz. MPEP 2143.03.

Claim 8, 9, 22 and 23 are rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Pomplun in combination with Schwarz, both

discussed above, and further in view of Anderson et al. (U.S. Patent No. 4,100,324) ("Anderson").

Applicants respectfully submit that Claims 8, 9, 22 and 23, which ultimately depend from Claim 1, as amended, are not rendered obvious over Pomplun in view of Schwarz and further in view of Anderson for the same reasons that Claim 1, as amended, is not rendered obvious over Pomplun in view of Schwarz. MPEP 2143.03.

Claim 10 is rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Pomplun in combination with Schwarz, both discussed above, and further in view of Haynes, et al (U.S. Patent Application Publication 2005/0133971 Al) ("Haynes").

Applicants respectfully submit that Claim 10, which ultimately depends from Claim 1, as amended, is not rendered obvious over Pomplun in view of Schwarz and further in view of Haynes for the same reasons that Claim 1, as amended, is not rendered obvious over Pomplun in view of Schwarz. MPEP 2143.03.

Claims 11 and 12 are rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Pomplun in combination with Schwarz, both discussed above, and further in view of Trokhan, et al (U.S. Patent Application Publication 2003/0203196 Al) ("Trokhan").

Applicants respectfully submit that Claims 11 and 12, which ultimately depend from Claim 1, as amended, are not rendered obvious over Pomplun in view of Schwarz and further in view of Trokhan for the same reasons that Claim 1, as amended, is not rendered obvious over Pomplun in view of Schwarz. MPEP 2143.03.

Claims 16-18 are rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Pomplun in combination with Schwarz, both discussed above, and further in view of Stadelman, et al (U.S. Patent Application Publication 2005/0170729 Al) ("Stadelman").

Applicants respectfully submit that Claims 16-18, which ultimately depend from Claim 1, as amended, are not rendered obvious over Pomplun in view of Schwarz and further in view of Stadelman for the same reasons that Claim 1, as amended, is not rendered obvious over Pomplun in view of Schwarz. MPEP 2143.03.

Claim 20 is rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Pomplun in combination with Schwarz, both discussed above, and further in view of Ouellette et al (U.S. Patent Application Publication 2007 /0202766 Al) ("Ouellette").

Applicants respectfully submit that Claim 20, which depends from Claim 1, as amended, is not rendered obvious over Pomplun in view of Schwarz and further in view of Ouellette for the same reasons that Claim 1, as amended, is not rendered obvious over Pomplun in view of Schwarz. MPEP 2143.03.

Claim 24 is rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Pomplun in combination with Schwarz and further in view of Anderson, all discussed above.

Applicants respectfully submit that Pomplun in view of Schwarz and further in view of Anderson fails to teach each and every element of Claim 24, an independent claim, as amended, for the same reasons that Pomplun in view of Schwarz cannot properly be combined as discussed above with respect to Claim 1. Accordingly, Applicants respectfully submit that Claim 24, as amended, is not rendered obvious over Pomplun in view of Schwarz. MPEP 2143.03.

CONCLUSION

This response represents an earnest effort to place the present application in proper form and to distinguish the invention as claimed from the applied references. In view of the foregoing, the Applicant respectfully requests the Examiner to reconsider this application and allow the pending claims.

Respectfully submitted,
THE PROCTER & GAMBLE COMPANY

By /C. Brant Cook/
C. Brant Cook
Registration No. 39,151
(513) 884-4932

Date: January 7, 2022
Customer No. 27752

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/702,920	12/04/2019	Steven Lee Barnholtz	10859CCC	3577

27752 7590 11/09/2021

THE PROCTER & GAMBLE COMPANY
GLOBAL IP SERVICES
CENTRAL BUILDING, C9
ONE PROCTER AND GAMBLE PLAZA
CINCINNATI, OH 45202

EXAMINER	
TENTONI, LEO B	

ART UNIT	PAPER NUMBER
1742	

NOTIFICATION DATE	DELIVERY MODE
11/09/2021	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):

centraldocket.im@pg.com
mayer.jk@pg.com
pair_pg@firsttofile.com

Office Action Summary	Application No. 16/702,920	Applicant(s) Barnholtz et al.	
	Examiner LEO B TENTONI	Art Unit 1742	AIA (FITF) Status No

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

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

Status

1)☑ Responsive to communication(s) filed on 11 October 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) 1-24 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) 1-24 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 09292021.

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 is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 103

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

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

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

4. Claims 1-7, 13-15, 19 and 21 is/are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pomplun et al (U.S. Patent 5,948,710 A) in combination with Schwarz (U.S. Patent 5,476,616 A) for the reasons of record.

Regarding the newly-added limitation of “three or more filament-forming holes” in claim 1, see col. 2, lines 15-52 and Figures 1, 2A and 2B of Schwarz.

5. Claims 8, 9, 22 and 23 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pomplun et al (U.S. Patent 5,948,710 A) in combination with Schwarz (U.S. Patent 5,476,616 A) as applied to claims 1-7, 13-15, 19 and 21 above, and further in view of Anderson et al (U.S. Patent 4,100,324 A) for the reasons of record.

6. Claim 10 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pomplun et al (U.S. Patent 5,948,710 A) in combination with Schwarz (U.S. Patent 5,476,616 A) as applied to claims 1-7, 13-15, 19 and 21 above, and further in view of Haynes et al (U.S. Patent Application Publication 2005/0133971 A1) for the reasons of record.

7. Claims 11 and 12 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pomplun et al (U.S. Patent 5,948,710 A) in combination with Schwarz (U.S. Patent 5,476,616 A) as applied to claims 1-7, 13-15, 19 and 21 above, and further in view of Trokhan et al (U.S. Patent Application Publication 2003/0203196 A1) for the reasons of record.

8. Claims 16-18 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pomplun et al (U.S. Patent 5,948,710 A) in combination with Schwarz (U.S. Patent 5,476,616 A) as applied to claims 1-7, 13-15, 19 and 21 above, and further in view of Stadelman et al (U.S. Patent Application Publication 2005/0170729 A1) for the reasons of record.

9. Claim 20 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pomplun et al (U.S. Patent 5,948,710 A) in combination with Schwarz (U.S. Patent 5,476,616 A) as applied to claims 1-7, 13-15, 19 and 21 above, and further in view of Ouellette et al (U.S. Patent Application Publication 2007/0202766 A1) for the reasons of record.

10. Claim 24 is/are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pomplun et al (U.S. Patent 5,948,710 A) in combination with Schwarz (U.S. Patent 5,476,616 A) for the reasons of record.

Regarding the newly-added limitation of "three or more filament-forming holes" in claim 24, see col. 2, lines 15-52 and Figures 1, 2A and 2B of Schwarz.

Response to Arguments

11. Applicant's arguments filed on 11 October 2021 have been fully considered but they are not persuasive.

12. Applicant argues (pages 6 and 7) that Pomplun et al and Schwarz are not properly combinable because Schwarz fails to recognize and/or teach and in fact teaches away from a die that utilizes converging air flows to entrain and attenuate its threads. Examiner responds that Schwarz does, in fact, teach a die that utilizes converging air flows to entrain and attenuate its threads (see col. 1, lines 20-28 (particularly col. 1, line 25) and col. 2, lines 15-52 (particularly col. S, lines 39-41) of Schwarz.

Conclusion

13. **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.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEO B. TENTONI whose telephone number is (571)272-1209. The examiner can normally be reached 7:30-4:00 ET M-F.

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, Christina A. Johnson can be reached on (571)272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LEO B. TENTONI
Primary Examiner

Art Unit 1742

/LEO B TENTONI/
Primary Examiner, Art Unit 1742

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/702,920	Barnholtz et al.
	Examiner	Art Unit
	LEO B TENTONI	1742

CPC - Searched*		
Symbol	**Date**	**Examiner**
B32B 37/20, 37/203	01/04/2021	LBT
D01D 5/08, 5/0985, 7/00, 10/02	01/04/2021	LBT
D01F 6/04, 6/06, 6/14, 6/60, 6/62, 6/625	01/04/2021	LBT
D04H 1/26, 1/4291, 1/4309, 1/4334, 1/435, 1/56, 3/007, 3/009, 3/011, 3/015, 3/16, 5/06	01/04/2021	LBT
D10B 2201/22, 2321/02, 2321/022, 2321/06, 2331/02, 2331/04, 2331/041	01/04/2021	LBT
ABOVE UPDATED	04/13/2021	LBT
ABOVE UPDATED	07/06/2021	LBT
ABOVE UPDATED	11/02/2021	LBT

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**
264	131, 171.1, 211.12, 555	01/04/2021	LBT
156	167, 244.11, 324	01/04/2021	LBT

* 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**
CHECKED PARENT AND PROVISIONAL APPLICATIONS	01/04/2021	LBT
INVENTOR NAME SEARCH	01/04/2021	LBT

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/702,920	Barnholtz et al.
	Examiner	Art Unit
	LEO B TENTONI	1742

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

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

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16702920
Filing Date	2019-12-04
First Named Inventor	BARNHOLTZ Steven Lee (BARNH/SL)
Art Unit	1742
Examiner Name	TENTONI, LEO B
Attorney Docket Number	--10859CCC-US

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
	1	9714484	B2	2017-07-25	Barnholtz, Steven Lee et al.	

If you wish to add additional U.S. Patent citation information please click the Add button.

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
	1	20030211802	A1	2003-11-13	Keck, Laura Elizabeth et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	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]
	1							☐

If you wish to add additional Foreign Patent Document citation information please click the Add button

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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /L.B.T/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16702920
	Filing Date	2019-12-04
	First Named Inventor	BARNHOLTZ Steven Lee (BARNH/SL)
	Art Unit	1742
	Examiner Name	TENTONI, LEO B
	Attorney Docket Number	--10859CCC-US

	1	All Office Actions; U.S. Patent Application Ser. No. 16/022,749 (Attorney Docket No. 10858C), filed on 06-29-2018; SEE PAIR	☐
	2	Miller, Bernard, "Liquid Porosimetry: New Methodology and Applications"Journal of Colloid and Interface Science, August 23,1993, pp n163-170.	☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	/LEO B TENTONI/	Date Considered	11/02/2021

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

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

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /L.B.T/

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 record s.

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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /L.B.T/

Electronic Acknowledgement Receipt

EFS ID:	43998979
Application Number:	16702920
International Application Number:	
Confirmation Number:	3577
Title of Invention:	Process for Making Fibrous Structures
First Named Inventor/Applicant Name:	Steven Lee Barnholtz
Customer Number:	27752
Filer:	Christopher Brant Cook
Filer Authorized By:	
Attorney Docket Number:	10859CCC
Receipt Date:	11-OCT-2021
Filing Date:	04-DEC-2019
Time Stamp:	16:54:15
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	Amendment/Req. Reconsideration-After Non-Final Reject	10859CCCAmdt.pdf	151370 916e95e1002315fcacd5cba05561708d767c64f9	no	9

Warnings:

Information:	
Total Files Size (in bytes):	151370

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New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	16/702,920
Inventor(s)	:	Steven Lee Barnholtz, et al.
Filed	:	December 4, 2019
Art Unit	:	1742
Examiner	:	Leo B. Tentoni
Docket No.	:	10859CCC
Confirmation No.	:	3577
Customer No.	:	27752
Title	:	Process for Making Fibrous Structures

AMENDMENT

This is in response to the Office Action of July 9, 2021. Please enter the amendments presented below, consider the following remarks and reconsider the application.

The Director is hereby authorized to charge all required fees (including any extension of time fees) and to credit any overpayments in this and any concurrent or future correspondence to Deposit Account No. 16-2480.

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

Remarks begin on page 6 of this paper.

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions and listings of the claims in the application.

Listing of Claims

1. (Currently Amended) A process for making a fibrous structure, the process comprising the steps of:

a. providing a die comprising three or more rows of ~~one~~three or more filament-forming holes;

b. supplying at least a first polymer to the die;

c. producing a plurality of filaments comprising the first polymer from the die;

d. combining the filaments with solid additives to form a mixture; and

e. collecting the mixture on a belt to produce a fibrous structure.

2. (Original) The process according to Claim 1 wherein at least one row of the one or more filament-forming holes comprises two or more filament-forming holes.

3. (Original) The process according to Claim 1 wherein one or more fluid-releasing holes are associated with a filament-forming hole.

4. (Original) The process according to Claim 3 wherein more than one fluid-releasing holes is associated with a filament-forming hole.

5. (Original) The process according to Claim 3 wherein at least one of the one or more fluid-releasing holes is concentrically positioned around one filament-forming hole.

6. (Original) The process according to Claim 1 wherein the first polymer comprises a synthetic polymer.

7. (Original) The process according to Claim 6 wherein the synthetic polymer is selected from the group consisting of: polyvinyl alcohol, polyvinyl alcohol derivatives, polyesters, nylons, polyolefins, polylactic acids, polyhydroxyalkanoates, polycaprolactones and mixtures thereof.

8. (Original) The process according to Claim 7 wherein the synthetic polymer comprises a polyolefin.

9. (Original) The process according to Claim 8 wherein the polyolefin comprises polypropylene.

10. (Original) The process according to Claim 7 wherein the synthetic polymer is selected from the group consisting of: polylactic acids, polyhydroxyalkanoates, polycaprolactones and mixtures thereof.

11. (Original) The process according to Claim 1 wherein the first polymer comprises a natural polymer.

12. (Original) The process according to Claim 11 wherein the natural polymer is selected from the group consisting of: starch, starch derivatives, cellulose, cellulose derivatives, hemicellulose, hemicellulose derivatives and mixtures thereof.

13. (Original) The process according to Claim 1 wherein the solid additives comprise fibers.

14. (Original) The process according to Claim 13 wherein the fibers comprise wood pulp fibers.

15. (Original) The process according to Claim 1 wherein the solid additives are combined with the plurality of filaments by a solid additive spreader.

16. (Original) The process according to Claim 1 wherein the process further comprises the step of:

f. contacting a surface of the fibrous structure with a plurality of filaments comprising a second polymer.

17. (Original) The process according to Claim 16 wherein the plurality of filaments comprising the second polymer are in the form of a second fibrous structure.

18. (Original) The process according to Claim 16 wherein the second polymer is the same as the first polymer.

19. (Previously Presented) The process according to Claim 3 wherein a fluid released by the fluid-releasing holes comprises air.

20. (Original) The process according to Claim 1 wherein the fibrous structure exhibits a pore volume distribution such that greater than about 40% of the total pore volume present in the fibrous structure exists in pores of radii of from about 121μm to about 200μm.

21. (Original) The process according to Claim 1 wherein the process further comprises the step of subjecting the fibrous structure to a thermal bonding operation.

22. (Original) The process according to Claim 1 wherein the process is directly coupled to a post-processing operation.

23. (Original) The process according to Claim 1 wherein the process is closely coupled to a post-processing operation.

24. (Currently Amended) A process for making a fibrous structure, the process comprising the steps of:

a. providing a die comprising three or more rows of ~~one~~three or more filament-forming holes;

b. supplying a polyolefin polymer to the die;

c. producing a plurality of filaments comprising the polyolefin polymer from the die;

d. combining the filaments with wood pulp fibers to form a mixture; and

e. collecting the mixture on a belt to produce a fibrous structure.

REMARKS

Claim Status

Claims 1 and 24 have been amended to define the claimed invention with greater specificity by reciting that the die comprises three or more rows of three or more filament-forming holes. Support for these amendments is found in the Specification.

Claims 1-24 are pending in the present application. No additional claims fee is believed to be due.

Rejections Under 35 USC 103

Claims 1-7, 13-15, 19 and 21 are rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Pomplun, et al. (U.S. Patent 5,948,710 A) ("Pomplun") in combination with Schwarz (U.S. Patent 5,476,616 A) ("Schwarz").

Applicants respectfully submit that Pomplun in view of Schwarz fails to teach each and every element of Claim 1, the independent claim, as amended, because the teachings of Pomplun in view of Schwarz cannot properly be combined to arrive at the claimed invention as claimed in Claim 1, as amended. Applicants respectfully submit that Pomplun teaches a die, as shown in its drawings, that comprises a single row of filament-forming holes, not three or more rows of three or more filament-forming holes, wherein two streams of usually heated attenuating gas converge to form a single stream of gas which entrains and attenuates the molten threads of water-degradable polymer, as the threads exit small the filament-forming holes. Applicants respectfully submit that nowhere does Pomplun teach or suggest a die that contains three or more rows of three or more filament-forming holes where the attenuation air does not converge. Applicants respectfully submit that Pomplun teaches the importance of the converging gas streams to entrain and attenuate its threads. Therefore, Applicants respectfully submit that there is no teaching, suggestion or motivation to modify Pomplun process by replacing Pomplun's die with Schwarz's die. Applicants respectfully submit that Schwarz fails to recognize and/or teach and in fact teaches away from a die that utilizes converging air flows to entrain and attenuate its

threads. Therefore, Applicants respectfully submit that the teachings of Pomplun and Schwarz cannot properly be combined to substitute Schwarz's die for Pomplun's die to achieve the claimed invention as claimed in Claim 1, as amended. Accordingly, Applicants respectfully submit that Claim 1, as amended, is not rendered obvious over Pomplun in view of Schwarz. MPEP 2143.03. Further, Applicants respectfully submit that Claims 2-7, 13-15, 19 and 21, which ultimately depend from Claim 1, as amended, are not rendered obvious over Pomplun in view of Schwarz. MPEP 2143.03.

Claim 8, 9, 22 and 23 are rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Pomplun in combination with Schwarz, both discussed above, and further in view of Anderson et al. (U.S. Patent No. 4,100,324) ("Anderson").

Applicants respectfully submit that Claims 8, 9, 22 and 23, which ultimately depend from Claim 1, as amended, are not rendered obvious over Pomplun in view of Schwarz and further in view of Anderson for the same reasons that Claim 1, as amended, is not rendered obvious over Pomplun in view of Schwarz. MPEP 2143.03.

Claim 10 is rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Pomplun in combination with Schwarz, both discussed above, and further in view of Haynes, et al (U.S. Patent Application Publication 2005/0133971 Al) ("Haynes").

Applicants respectfully submit that Claim 10, which ultimately depends from Claim 1, as amended, is not rendered obvious over Pomplun in view of Schwarz and further in view of Haynes for the same reasons that Claim 1, as amended, is not rendered obvious over Pomplun in view of Schwarz. MPEP 2143.03.

Claims 11 and 12 are rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Pomplun in combination with Schwarz, both discussed above, and further in view of Trokhan, et al (U.S. Patent Application Publication 2003/0203196 Al) ("Trokhan").

Applicants respectfully submit that Claims 11 and 12, which ultimately depend from Claim 1, as amended, are not rendered obvious over Pomplun in view of Schwarz and

further in view of Trokhan for the same reasons that Claim 1, as amended, is not rendered obvious over Pomplun in view of Schwarz. MPEP 2143.03.

Claims 16-18 are rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Pomplun in combination with Schwarz, both discussed above, and further in view of Stadelman, et al (U.S. Patent Application Publication 2005/0170729 Al) ("Stadelman").

Applicants respectfully submit that Claims 16-18, which ultimately depend from Claim 1, as amended, are not rendered obvious over Pomplun in view of Schwarz and further in view of Stadelman for the same reasons that Claim 1, as amended, is not rendered obvious over Pomplun in view of Schwarz. MPEP 2143.03.

Claim 20 is rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Pomplun in combination with Schwarz, both discussed above, and further in view of Ouellette et al (U.S. Patent Application Publication 2007 /0202766 Al) ("Ouellette").

Applicants respectfully submit that Claim 20, which depends from Claim 1, as amended, is not rendered obvious over Pomplun in view of Schwarz and further in view of Ouellette for the same reasons that Claim 1, as amended, is not rendered obvious over Pomplun in view of Schwarz. MPEP 2143.03.

Claim 24 is rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Pomplun in combination with Schwarz and further in view of Anderson, all discussed above.

Applicants respectfully submit that Pomplun in view of Schwarz and further in view of Anderson fails to teach each and every element of Claim 24, an independent claim, as amended, because the teachings of Pomplun in view of Schwarz and further in view of Anderson cannot properly be combined to arrive at the claimed invention as claimed in Claim 1, as amended. Applicants respectfully submit that Pomplun teaches a die, as shown in its drawings, that comprises a single row of filament-forming holes, not three or more rows of three or more filament-forming holes, wherein two streams of usually heated attenuating gas converge to form a single stream of gas which entrains and attenuates the molten threads of water-degradable polymer, as the threads exit small the filament-forming

holes. Applicants respectfully submit that nowhere does Pomplun teach or suggest a die that contains three or more rows of three or more filament-forming holes where the attenuation air does not converge. Applicants respectfully submit that Pomplun teaches the importance of the converging gas streams to entrain and attenuate its threads. Therefore, Applicants respectfully submit that there is no teaching, suggestion or motivation to modify Pomplun process by replacing Pomplun's die with Schwarz's die. Applicants respectfully submit that Schwarz fails to recognize and/or teach and in fact teaches away from a die that utilizes converging air flows to entrain and attenuate its threads. Applicants respectfully submit that the teachings of Anderson fail to overcome the deficiencies of Pomplun and Schwarz. Therefore, Applicants respectfully submit that the teachings of Pomplun and Schwarz and Anderson cannot properly be combined to substitute Schwarz's die for Pomplun's die to achieve the claimed invention as claimed in Claim 24, as amended. Accordingly, Applicants respectfully submit that Claim 24, as amended, is not rendered obvious over Pomplun in view of Schwarz. MPEP 2143.03.

CONCLUSION

This response represents an earnest effort to place the present application in proper form and to distinguish the invention as claimed from the applied references. In view of the foregoing, the Applicant respectfully requests the Examiner to enter the amendments presented herein, reconsider this application and allow the pending claims.

Respectfully submitted,
THE PROCTER & GAMBLE COMPANY

By /C. Brant Cook/
C. Brant Cook
Registration No. 39,151
(513) 884-4932

Date: October 11, 2021
Customer No. 27752

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/702,920	Filing Date 12/04/2019	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $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	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	10/11/2021	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 24	Minus	** 24	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 2	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

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $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/
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16702920
Filing Date	2019-12-04
First Named Inventor	BARNHOLTZ Steven Lee (BARNH/SL)
Art Unit	1742
Examiner Name	TENTONI, LEO B
Attorney Docket Number	--10859CCC-US

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
	1	9714484	B2	2017-07-25	Barnholtz, Steven Lee et al.	

If you wish to add additional U.S. Patent citation information please click the Add button.

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
	1	20030211802	A1	2003-11-13	Keck, Laura Elizabeth et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	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]
	1							☐

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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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16702920
	Filing Date	2019-12-04
	First Named Inventor	BARNHOLTZ Steven Lee (BARNH/SL)
	Art Unit	1742
	Examiner Name	TENTONI, LEO B
	Attorney Docket Number	--10859CCC-US

	1	All Office Actions; U.S. Patent Application Ser. No. 16/022,749 (Attorney Docket No. 10858C), filed on 06-29-2018; SEE PAIR	☐
	2	Miller, Bernard, "Liquid Porosimetry: New Methodology and Applications"Journal of Colloid and Interface Science, August 23,1993, pp n163-170.	☐

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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.

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

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

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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.

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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. 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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	16/702,920
Inventor(s)	:	Steven Lee Barnholtz et al.
Filed	:	December 04, 2019
Art Unit	:	1742
Examiner	:	TENTONI, LEO B
Docket No.	:	10859CCC
Confirmation No.	:	3577
Customer No.	:	27752
Title	:	PROCESS FOR MAKING FIBROUS STRUCTURES

INFORMATION DISCLOSURE STATEMENT

Pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98, it is respectfully requested that the document(s) cited in this submission be carefully considered by the Examiner and made of record in this case. As provided in §1.97(g), no representation is made or intended that a thorough art search was made. As provided in 37 C.F.R. §1.97(h), this Information Disclosure Statement does not constitute an admission of any kind, and specifically is not an admission that the document(s) cited in this submission is (are), or is (are) considered to be, material to the patentability of the above-identified patent application, as defined in 37 C.F.R. §1.56(b).

This Information Disclosure Statement is being submitted under 37 C.F.R. §1.97(c). I hereby elect to pay the fee set forth in 37 C.F.R. §1.17(p). Authorization is hereby given to charge the fee set forth in 37 C.F.R. §1.17(p) to Deposit Account Number 16-2480 in the name of The Procter & Gamble Company.

Additional Items to be Noted by the Examiner

In accordance with 37 C.F.R. §1.98(a)(2), one or more foreign patent documents and/or non-patent literature is provided.

Respectfully submitted,

THE PROCTER & GAMBLE COMPANY

By /C. Brant Cook/
Signature
C. Brant Cook
Registration No. 39,151
(513)-884-4932

Date: September 24, 2021
Customer No. 27752

Electronic Patent Application Fee Transmittal

Application Number:	16702920
Filing Date:	04-Dec-2019
Title of Invention:	Process for Making Fibrous Structures
First Named Inventor/Applicant Name:	Steven Lee Barnholtz
Filer:	David Michael Weirich/Aanchal Wadhwa
Attorney Docket Number:	10859CCC

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($)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	1806	1	260	260
		Total in USD ($)		**260**

Electronic Acknowledgement Receipt

EFS ID:	43894408
Application Number:	16702920
International Application Number:	
Confirmation Number:	3577
Title of Invention:	Process for Making Fibrous Structures
First Named Inventor/Applicant Name:	Steven Lee Barnholtz
Customer Number:	27752
Filer:	David Michael Weirich/Aanchal Wadhwa
Filer Authorized By:	David Michael Weirich
Attorney Docket Number:	10859CCC
Receipt Date:	29-SEP-2021
Filing Date:	04-DEC-2019
Time Stamp:	01:20:34
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$260
RAM confirmation Number	E20219S220573075
Deposit Account	
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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	Information Disclosure Statement (IDS) Form (SB08)	10859CCC_US_Listofreferences cited_09_23_21.pdf	634979 eaaf29f2c54c96ac60cf3c01899c222ce13585bb	no	3
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
2	Transmittal Letter	10859CCC_US_IDSLetter_09_21_21.pdf	75819 30df09ee28e140d1e71af7400e76fc2368e48beb	no	2
Warnings:					
Information:					
3	Non Patent Literature	Liquid.pdf	1126648 9c5991147a3e2d1205af31b8d0e330afc0c0c67f	no	8
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	38220 792c22f66922248f709001123c056ff801cb38b13	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1875666		

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New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/702,920	12/04/2019	Steven Lee Barnholtz	10859CCC	3577

27752 7590 07/09/2021

THE PROCTER & GAMBLE COMPANY
GLOBAL IP SERVICES
CENTRAL BUILDING, C9
ONE PROCTER AND GAMBLE PLAZA
CINCINNATI, OH 45202

EXAMINER	
TENTONI, LEO B	

ART UNIT	PAPER NUMBER
1742	

NOTIFICATION DATE	DELIVERY MODE
07/09/2021	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):

centraldocket.im@pg.com
mayer.jk@pg.com
pair_pg@firsttofile.com

Office Action Summary	Application No. 16/702,920	Applicant(s) Barnholtz et al.	
	Examiner LEO B TENTONI	Art Unit 1742	AIA (FITF) Status No

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

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

Status

1)☑ Responsive to communication(s) filed on 16 June 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) 1-24 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) 1-24 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 06162021.

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 is being examined under the pre-AIA first to invent provisions.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 16 June 2021 has been entered.

Claim Rejections - 35 USC § 103

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

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

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

5. Claims 1-7, 13-15, 19 and 21 is/are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pomplun et al (U.S. Patent 5,948,710 A) in combination with Schwarz (U.S. Patent 5,476,616 A).

Regarding claim 1, Pomplun et al (see the entire document, in particular, col. 1, lines 12-17; col. 4, lines 24-30; col. 6, line 65 to col. 7, line 12; col. 8, line 54 to col. 10, line 24; col. 12, lines 41-58; Figures 1 and 3) teaches a process of making a fibrous structure (see col. 1, lines 12-17 and col. 4, lines 24-30 of Pomplun et al), including the steps of (a) providing a die including one or more filament-forming holes (see col. 8, line 54 to col. 10, line 24 and Figure 1 of Pomplun et al); (b) supplying at least a first polymer to the die (see col. 8, line 54 to col. 10, line 24 and Figure 1 of Pomplun et al); (c) producing a plurality of filaments including the first polymer from the die (see col. 8, line 54 to col. 10, line 24 and Figure 1 of Pomplun et al); (d) combining the filaments with solid additives to form a mixture (see col. 8, line 54 to col. 10, line 24 and Figure 1 of Pomplun et al); and (e) collecting the mixture on a belt to produce a fibrous structure (see col. 12, lines 41-58 and Figure 3 of Pomplun et al). Pomplun et al does not explicitly teach (1) that the die includes three or more rows (of one or more filament-forming holes). Schwarz (see the entire document, in particular, col. 1, lines 20-28; col. 2, lines 15-52 and 62-67; claim 5, lines 1-2; Figures 1, 2A and 2b) teaches a process of making a fibrous structure (see claim 5, lines 1-2 of Schwarz), wherein the die includes three or more rows (of one or more filament-forming holes) (see col. 2, lines 15-52; Figures 1, 2A and 2B of Schwarz), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a die including three or more rows (of one or more filament-forming hole) in

the process of Pomplun et al in view of Schwarz in order to increase the productivity of the process and provide a uniform gas stream (see col. 1, lines 20-28 of Schwarz).

Regarding claims 2-5 and 19, see col. 2, lines 15-52; Figures 1, 2A and 2B of Schwarz.

Regarding claims 6 and 7, see col. 6, line 65 to col. 7, line 12 of Pomplun et al.

Regarding claims 13-15, see col. 8, line 54 to col. 10, line 24 of Pomplun et al.

Regarding claim 21, see col. 10, lines 10-24 of Pomplun et al.

6. Claims 8, 9, 22 and 23 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pomplun et al (U.S. Patent 5,948,710 A) in combination with Schwarz (U.S. Patent 5,476,616 A) as applied to claims 1-7, 13-15, 19 and 21 above, and further in view of Anderson et al (U.S. Patent 4,100,324 A).

Regarding claim 8, Pomplun et al (in combination with Schwarz) teaches the use of a polyolefin in melt-blowing process (polypropylene; see col. 2, lines 62-67 of Schwarz), but does not explicitly teach (1) the use of a polyolefin in a co-form process (i.e., a process including the steps of melt-blowing and combining fibrous additives). Anderson et al (see the entire document, in particular, col. 1, lines 13-17; col. 2, lines 38-60; col. 2, line 64 to col. 3, line 17; col. 6, lines 29-42 and 46-61; col. 7, lines 42-44 and 59-68) teaches a process of making a fibrous structure (see col. 1, lines 13-17 of Anderson et al), including the use of a polyolefin in a co-form process (see col. 2, lines 38-60 and col. 7, lines 59-68 of Anderson et al), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a polyolefin in the process of Pomplun et al (in combination with Schwarz) in view of Anderson et al because Schwarz teaches the use of a polyolefin in a melt-blowing process (see col. 2, lines 62-67 of Schwarz) and the substitution of one known material (i.e., polyolefin, as taught by

Anderson et al) for another known material (i.e., polyester, polyvinyl alcohol, as taught by Pomplun et al) would have yielded predictable results (e.g., the manufacture of a fibrous structure using a co-form process) to one of ordinary skill in the art.

Regarding claim 9, see col. 7, lines 59-68 of Anderson et al.

Regarding claim 22, see col. 7, lines 42-44 of Anderson et al.

Regarding claim 23, see col. 6, lines 38-42 of Anderson et al.

7. Claim 10 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pomplun et al (U.S. Patent 5,948,710 A) in combination with Schwarz (U.S. Patent 5,476,616 A) as applied to claims 1-7, 13-15, 19 and 21 above, and further in view of Haynes et al (U.S. Patent Application Publication 2005/0133971 A1).

Regarding claim 10, Pomplun et al (in combination with Schwarz) does not explicitly teach (1) that the polymer is poly-lactic acids, polyhydroxyalkanoates, polycaprolactones, and mixtures thereof. Haynes et al (see the entire document, in particular, paragraphs [0003], [0035] and [0071]) teaches a process of making a fibrous structure (see paragraphs [0003] and [0035] of Haynes et al), wherein the polymer is poly-lactic acid (see paragraph [0071] of Haynes et al), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to use poly-lactic acid in the process of Pomplun et al (in combination with Schwarz) in view of Haynes et al because the substitution of one known material (i.e., poly-lactic acid, as taught by Haynes et al) for another known material (i.e., polyester, polyvinyl alcohol, as taught by Pomplun et al) would have yielded predictable results (e.g., the manufacture of a fibrous structure) to one of ordinary skill in the art.

8. Claims 11 and 12 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pomplun et al (U.S. Patent 5,948,710 A) in combination with Schwarz (U.S. Patent 5,476,616 A) as applied to claims 1-7, 13-15, 19 and 21 above, and further in view of Trokhan et al (U.S. Patent Application Publication 2003/0203196 A1).

Regarding claim 11, Pomplun et al (in combination with Schwarz) does not explicitly teach (1) that the polymer includes a natural polymer. Trokhan et al (see the entire document, in particular, paragraphs [0007], [0008], [0123], [0127], [0130] and [0152]) teaches a process of making a fibrous structure (see paragraph [0008] of Trokhan et al), wherein the polymer is a natural polymer (see paragraphs [01237], [0127], [0130] and [0152] of Trokhan et al), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a natural polymer in the process of Pomplun et al (in combination with Schwarz) in view of Trokhan et al because the substitution of one known material (i.e., starch, as taught by Trokhan et al) for another known material (i.e., polyester, polyvinyl alcohol, as taught by Pomplun et al) would have yielded predictable results (e.g., the manufacture of a fibrous structure) to one of ordinary skill in the art.

Regarding claim 12, see paragraphs [0123], [0127], [0130] and [0152] of Trokhan et al.

9. Claims 16-18 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pomplun et al (U.S. Patent 5,948,710 A) in combination with Schwarz (U.S. Patent 5,476,616 A) as applied to claims 1-7, 13-15, 19 and 21 above, and further in view of Stadelman et al (U.S. Patent Application Publication 2005/0170729 A1).

Regarding claim 16, Pomplun et al (in combination with Schwarz) does not explicitly teach (1) the step of contacting a surface of the fibrous structure with a plurality of filaments

including a second polymer. Stadelman et al (see the entire document, in particular, paragraphs [0011] and [0012]) teaches a process of making a fibrous structure (see paragraph [0012] of Stadelman et al), including the step of contacting a surface of the fibrous structure with a plurality of filaments including a second polymer (see paragraph [0011] of Stadelman et al), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to contact a surface of the fibrous structure with a plurality of filaments including a second polymer in the process of Pomplun et al (in combination with Schwarz) in view of Stadelman et al in order to manufacture a fibrous structure having acceptable elastic and storage capabilities (see paragraph [0011] of Stadelman et al).

Regarding claims 17 and 18, see paragraph [0012] of Stadelman et al.

10. Claim 20 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pomplun et al (U.S. Patent 5,948,710 A) in combination with Schwarz (U.S. Patent 5,476,616 A) as applied to claims 1-7, 13-15, 19 and 21 above, and further in view of Ouellette et al (U.S. Patent Application Publication 2007/0202766 A1).

Regarding claim 20, Pomplun et al (in combination with Schwarz) does not explicitly teach (1) making a fibrous structure having a pore volume distribution such that greater than about 40% of the total pore volume present in the fibrous structure exists in pores of radii of from about 121 μm to about 200 μm. Ouellette et al (see the entire document, in particular, paragraphs [0016], [0019] and [0088]; Figures 4-6) teaches a process of making a fibrous structure (see paragraph [0019] of Ouellette et al), including making a fibrous structure having a pore volume distribution such that greater than about 40% of the total pore volume present in the fibrous structure exists in pores of radii of from about 121 μm to about 200 μm (see

paragraph [0088] and Figures 4-6 of Ouellette et al), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to make a fibrous structure having a pore volume distribution such that greater than about 40% of the total pore volume present in the fibrous structure exists in pores of radii of from about 121 μm to about 200 μm in the process of Pomplun et al (in combination with Schwarz) in view of Ouellette et al in order to make a fibrous structure having a desired pore distribution (see paragraph [0016] of Ouellette et al).

11. Claim 24 is/are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pomplun et al (U.S. Patent 5,948,710 A) in combination with Schwarz (U.S. Patent 5,476,616 A) and Anderson et al (U.S. Patent 4,100,324 A).

Regarding claim 24, Pomplun et al (see the entire document, in particular, col. 1, lines 12-17; col. 4, lines 24-30; col. 6, line 65 to col. 7, line 12; col. 8, line 54 to col. 10, line 24; col. 12, lines 41-58; Figures 1 and 3) teaches a process of making a fibrous structure (see col. 1, lines 12-17 and col. 4, lines 24-30 of Pomplun et al), including the steps of (a) providing a die including one or more filament-forming holes (see col. 8, line 54 to col. 10, line 24 and Figure 1 of Pomplun et al); (b) supplying at least a polymer to the die (see col. 8, line 54 to col. 10, line 24 and Figure 1 of Pomplun et al); (c) producing a plurality of filaments including the polymer from the die (see col. 8, line 54 to col. 10, line 24 and Figure 1 of Pomplun et al); (d) combining the filaments with wood pulp fibers to form a mixture (see col. 8, line 54 to col. 10, line 24 and Figure 1 of Pomplun et al); and (e) collecting the mixture on a belt to produce a fibrous structure (see col. 12, lines 41-58 and Figure 3 of Pomplun et al). Pomplun et al does not explicitly teach (1) that the die includes three or more rows (of one or more filament-forming

holes), or (2) the use of a polyolefin polymer. Schwarz (see the entire document, in particular, col. 1, lines 20-28; col. 2, lines 15-52 and 62-67; claim 5, lines 1-2; Figures 1, 2A and 2b) teaches a process of making a fibrous structure (see claim 5, lines 1-2 of Schwarz), wherein the die includes three or more rows (of one or more filament-forming holes) (see col. 2, lines 15-52; Figures 1, 2A and 2B of Schwarz), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a die including three or more rows (of one or more filament-forming hole) in the process of Pomplun et al in view of Schwarz in order to increase the productivity of the process and provide a uniform gas stream (see col. 1, lines 20-28 of Schwarz). Anderson et al (see the entire document, in particular, col. 1, lines 13-17; col. 2, lines 38-60; col. 2, line 64 to col. 3, line 17; col. 6, lines 29-42 and 46-61; col. 7, lines 42-44 and 59-68) teaches a process of making a fibrous structure (see col. 1, lines 13-17 of Anderson et al), including the use of a polyolefin polymer in a co-form process (see col. 2, lines 38-60 and col. 7, lines 59-68 of Anderson et al), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a polyolefin polymer in the process of Pomplun et al in view of Anderson et al because the substitution of one known material (i.e., polyolefin, as taught by Anderson et al) for another known material (i.e., polyester, polyvinyl alcohol, as taught by Pomplun et al) would have yielded predictable results (e.g., the manufacture of a fibrous structure using a co-form process) to one of ordinary skill in the art.

Response to Arguments

12. Applicant's arguments, see page 2 of the reply, filed on 16 June 2021, with respect to the rejection(s) of claim(s) 1-24 under 35 U.S.C. §103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further

consideration, a new ground(s) of rejection is made in view of Pomplun et al (U.S. Patent 5,948,710 A) as the main (or primary) reference which, like Schwarz, includes a step of melt-blowing continuous filaments.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEO B. TENTONI whose telephone number is (571)272-1209. The examiner can normally be reached on 7:30-4:00 ET M-F.

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, Christina A. Johnson can be reached on (571)272-1176. 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.

LEO B. TENTONI
Primary Examiner
Art Unit 1742

/LEO B TENTONI/
Primary Examiner, Art Unit 1742

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/702,920	Barnholtz et al.
	Examiner	Art Unit
	LEO B TENTONI	1742

CPC - Searched*		
Symbol	**Date**	**Examiner**
B32B 37/20, 37/203	01/04/2021	LBT
D01D 5/08, 5/0985, 7/00, 10/02	01/04/2021	LBT
D01F 6/04, 6/06, 6/14, 6/60, 6/62, 6/625	01/04/2021	LBT
D04H 1/26, 1/4291, 1/4309, 1/4334, 1/435, 1/56, 3/007, 3/009, 3/011, 3/015, 3/16, 5/06	01/04/2021	LBT
D10B 2201/22, 2321/02, 2321/022, 2321/06, 2331/02, 2331/04, 2331/041	01/04/2021	LBT
ABOVE UPDATED	04/13/2021	LBT
ABOVE UPDATED	07/06/2021	LBT

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**
264	131, 171.1, 211.12, 555	01/04/2021	LBT
156	167, 244.11, 324	01/04/2021	LBT

* 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**
CHECKED PARENT AND PROVISIONAL APPLICATIONS	01/04/2021	LBT
INVENTOR NAME SEARCH	01/04/2021	LBT

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/702,920	Barnholtz et al.
	Examiner	Art Unit
	LEO B TENTONI	1742

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

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

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	16702920
	Filing Date	2019-12-04
	First Named Inventor	BARNHOLTZ Steven Lee (BARNH/SL)
	Art Unit	1742
	Examiner Name	LEO B. TENTONI
	Attorney Docket Number	--10859CCC-US

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
	1	4270289	A	1981-06-02	Kimura, Yoshimi	
	2	4295987	A	1981-10-20	Parks, Lawrence R	
	3	4950601	A	1990-08-21	Macdonald, J Gavin et al.	
	4	9926648	B2	2018-03-27	Barnholtz, Steven Lee et al.	
	5	10024000	B2	2018-07-17	Barnholtz, Steven Lee et al.	Equiv to WO2009010939A2
	6	10513801	B2	2019-12-24	Barnholtz, Steven Lee et al.	
If you wish to add additional U.S. Patent citation information please click the Add button.						

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

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /L.B.T/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16702920
	Filing Date	2019-12-04
	First Named Inventor	BARNHOLTZ Steven Lee (BARNH/SL)
	Art Unit	1742
	Examiner Name	LEO B. TENTONI
	Attorney Docket Number	--10859CCC-US

	1	20030106560	A1	2003-06-12	Griesbach, Henry L et al.	
	2	20030114066	A1	2003-06-19	Clark, Darryl Franklin et al.	
	3	20030116890	A1	2003-06-26	Chambers, Leon Eugene et al.	
	4	20040116018	A1	2004-06-17	Fenwick, Christopher Dale et al.	
	5	20040123963	A1	2004-07-01	Chen, Fung-jou et al.	
	6	20050266760	A1	2005-12-01	Chhabra, Rajeev et al.	
	7	20050279470	A1	2005-12-22	Redd, Charles A et al.	
	8	20060014460	A1	2006-01-19	Alexander, Isele Olaf E et al.	
	9	20060084340	A1	2006-04-20	Bond, Eric B et al.	
	10	20060141891	A1	2006-06-29	Melius, Shannon K et al.	
	11	20070269627	A1	2007-11-22	Vinson, Kenneth Douglas et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /L.B.T/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16702920
	Filing Date	2019-12-04
	First Named Inventor	BARNHOLTZ Steven Lee (BARNH/SL)
	Art Unit	1742
	Examiner Name	LEO B. TENTONI
	Attorney Docket Number	--10859CCC-US

	12	20180305871	A1	2018-10-25	Barnholtz, Steven Lee et al.	
	13	20190136458	A1	2019-05-09	Barnholtz, Steven Lee et al.	
	14	20190242066	A1	2019-08-08	Barnholtz, Steven Lee et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country 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]
	1	2004098474	WO	A1	2004-11-18	SGA HYGIENE PRODUCTS AB		☐

If you wish to add additional Foreign Patent Document citation information please click the Add button

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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	All Office Actions, U.S. Patent Application Ser. No. 12/170585(Attorney Docket No. 10857), SEE PAIR	☐
	2	All Office Actions, U.S. Patent Application Ser. No. 16/237,950 (Attorney Docket No. 10857CC2), SEE PAIR	☐
	3	All Office Actions, U.S. Patent Application Ser. No. 16/237943 (Attorney Docket No. 10857CC), SEE PAIR	☐

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /L.B.T/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16702920
	Filing Date	2019-12-04
	First Named Inventor	BARNHOLTZ Steven Lee (BARNH/SL)
	Art Unit	1742
	Examiner Name	LEO B. TENTONI
	Attorney Docket Number	--10859CCC-US

	4	International Search Report and Written Opinion; Application Ser. No. PCT/1B2008/052889, (Attorney Docket No. 10859; dated January 22, 2009, 17 pages.	☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	/LEO B TENTONI/	Date Considered	07/06/2021

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

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

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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 record s.

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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /L.B.T/

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16702920
Filing Date	2019-12-04
First Named Inventor	BARNHOLTZ Steven Lee (BARNH/SL)
Art Unit	1742
Examiner Name	LEO B. TENTONI
Attorney Docket Number	--10859CCC-US

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
	1	4270289	A	1981-06-02	Kimura, Yoshimi	
	2	4295987	A	1981-10-20	Parks, Lawrence R	
	3	4950601	A	1990-08-21	Macdonald, J Gavin et al.	
	4	9926648	B2	2018-03-27	Barnholtz, Steven Lee et al.	
	5	10024000	B2	2018-07-17	Barnholtz, Steven Lee et al.	Equiv to WO2009010939A2
	6	10513801	B2	2019-12-24	Barnholtz, Steven Lee et al.	

If you wish to add additional U.S. Patent citation information please click the Add button.

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	First Named Inventor	BARNHOLTZ Steven Lee (BARNH/SL)
	Art Unit	1742
	Examiner Name	LEO B. TENTONI
	Attorney Docket Number	--10859CCC-US

	1	20030106560	A1	2003-06-12	Griesbach, Henry L et al.	
	2	20030114066	A1	2003-06-19	Clark, Darryl Franklin et al.	
	3	20030116890	A1	2003-06-26	Chambers, Leon Eugene et al.	
	4	20040116018	A1	2004-06-17	Fenwick, Christopher Dale et al.	
	5	20040123963	A1	2004-07-01	Chen, Fung-jou et al.	
	6	20050266760	A1	2005-12-01	Chhabra, Rajeev et al.	
	7	20050279470	A1	2005-12-22	Redd, Charles A et al.	
	8	20060014460	A1	2006-01-19	Alexander, Isele Olaf E et al.	
	9	20060084340	A1	2006-04-20	Bond, Eric B et al.	
	10	20060141891	A1	2006-06-29	Melius, Shannon K et al.	
	11	20070269627	A1	2007-11-22	Vinson, Kenneth Douglas et al.	

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	Art Unit	1742
	Examiner Name	LEO B. TENTONI
	Attorney Docket Number	--10859CCC-US

	12	20180305871	A1	2018-10-25	Barnholtz, Steven Lee et al.	
	13	20190136458	A1	2019-05-09	Barnholtz, Steven Lee et al.	
	14	20190242066	A1	2019-08-08	Barnholtz, Steven Lee et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button.

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Examiner Signature		Date Considered	

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PATENT COOPERATION TREATY

FEB 02 2009

From the INTERNATIONAL SEARCHING AUTHORITY

To: JCC ✓

THE PROCTER & GAMBLE COMPANY
Attn. Hughett, Eileen L.
Sycamore Building, 4th Floor
299 East Sixth Street
Cincinnati, OH 45202
ETATS-UNIS D'AMERIQUE

CBC. IB ; SCAN

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 10859/JC	Date of mailing *(day/month/year)* 22/01/2009
International application No. PCT/IB2008/052889	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
Applicant THE PROCTER & GAMBLE COMPANY	International filing date *(day/month/year)* 17/07/2008

1. [X] The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the International Search Report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Fascimile No.: (41-22) 338.82.70

   For more detailed instructions, see the notes on the accompanying sheet.

2. [ ] The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. [ ] **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   [ ] the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   [ ] no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the International Searching Authority	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Paul Faux

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims,description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Volume I/A, Annexes B1 and B2).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, Volume I/A, paragraph 296).

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped),whether

(i) the claim is unchanged;

(ii) the claim is cancelled;

(iii) the claim is new;

(iv) the claim replaces one or more claims as filed;

(v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."

2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."

3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."

4. [Where various kinds of amendments are made]:
"Claims 1–10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments and any accompanying statement, under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the time of filing the amendments (and any statement) with the International Bureau, also file with the International Preliminary Examining Authority a copy of such amendments (and of any statement) and, where required, a translation of such amendments for the procedure before that Authority (see Rules 55.3(a) and 62.2, first sentence). For further information, see the Notes to the demand form (PCT/IPEA/401).

If a demand for international preliminary examination is made, the written opinion of the International Searching Authority will, except in certain cases where the International Preliminary Examining Authority did not act as International Searching Authority and where it has notified the International Bureau under Rule 66.1*bis*(b), be considered to be a written opinion of the International Preliminary Examining Authority. If a demand is made, the applicant may submit to the International Preliminary Examining Authority a reply to the written opinion together, where appropriate, with amendments before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later (Rule 43*bis*.1(c)).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see the *PCT Applicant's Guide*, Volume II.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
10859/JC		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/IB2008/052889	17/07/2008	17/07/2007
Applicant		
THE PROCTER & GAMBLE COMPANY		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 5 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language,** the international search was carried out on the basis of:

[X] the international application in the language in which it was filed

[ ] a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. [ ] This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. [ ] **Certain claims were found unsearchable** (See Box No. II)

3. [ ] **Unity of invention is lacking** (see Box No III)

4. With regard to the **title,**

[X] the text is approved as submitted by the applicant

[ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

[X] the text is approved as submitted by the applicant

[ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings,**

a. the figure of the **drawings** to be published with the abstract is Figure No. 10

[X] as suggested by the applicant

[ ] as selected by this Authority, because the applicant failed to suggest a figure

[ ] as selected by this Authority, because this figure better characterizes the invention

b. [ ] none of the figures is to be published with the abstract

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2008/052889

A. CLASSIFICATION OF SUBJECT MATTER
INV. D04H1/56 D01D4/02 D01D5/098

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
D04H D01D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 156 649 A (MINNESOTA MINING & MFG [US]) 2 October 1985 (1985-10-02) page 4, line 34 - page 6, line 30; figure 1	1-14
Y	US 4 118 531 A (HAUSER EDWARD R) 3 October 1978 (1978-10-03) column 4, line 8 - line 60; figure 1	1-14
Y	EP 0 294 137 A (PROCTER & GAMBLE [US]; MINNESOTA MINING & MFG [US]) 7 December 1988 (1988-12-07) page 9, line 6 - line 46; figure 1	1-14
Y	GB 2 113 731 A (KIMBERLY CLARK LTD) 10 August 1983 (1983-08-10) claim 15	1-14

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
9 January 2009	22/01/2009

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Elsässer, Ralf

FITESA/Exhibit 1028,Page 99 of 304

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2008/052889

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 100 324 A (ANDERSON RICHARD A ET AL) 11 July 1978 (1978-07-11) claim 1	1-14
Y	US 5 476 616 A (SCHWARZ ECKHARD C A [US]) 19 December 1995 (1995-12-19) column 2, line 46; claim 1 column 1, line 31 - line 38	1-14
A	US 3 954 361 A (PAGE ROBERT EDWARD) 4 May 1976 (1976-05-04) column 2, line 54 - line 58; figures 1,2	1-14
A	WO 03/080905 A (NANO TECHNICS CO LTD [KR]; KIM YONG MIN [KR]; SUNG YOUNG BIN [KR]; JAN) 2 October 2003 (2003-10-02) figure 2b	1-14
Y	US 2005/056956 A1 (ZHAO RONGGUO [US] ET AL) 17 March 2005 (2005-03-17) claim 1	6
A	WO 2005/106085 A (BIAX FIBERFILM CORP [US]; ZHAO RONGGUO [US]) 10 November 2005 (2005-11-10) claim 1	1-14

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2008/052889

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0156649 A	02-10-1985	AU 576829 B2	08-09-1988
		AU 3965085 A	03-10-1985
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		CA 1267271 A1	03-04-1990
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2008/052889

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 03080905 A		EP 1495170 A1	12-01-2005
		JP 4047286 B2	13-02-2008
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US 2005056956 A1	17-03-2005	NONE	
WO 2005106085 A	10-11-2005	NONE	

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/IB2008/052889	17.07.2008	17.07.2007

International Patent Classification (IPC) or both national classification and IPC
INV. D04H1/56 D01D4/02 D01D5/098

Applicant
THE PROCTER & GAMBLE COMPANY

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:

European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Date of completion of this opinion
see form PCT/ISA/210

Authorized Officer
Elsässer, Ralf

Telephone No. +49 89 2399 2581

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material:

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material:

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing:

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in electronic form.

      ☐ furnished subsequently to this Authority for the purposes of search.

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-14
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-14
Industrial applicability (IA)	Yes:	Claims	1-14
	No:	Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

D1: EP-A-0 156 649 (MINNESOTA MINING & MFG [US]) 2 October 1985 (1985-10-02)
D2: US-A-4 118 531 (HAUSER EDWARD R) 3 October 1978 (1978-10-03)
D3: EP-A-0 294 137 (PROCTER & GAMBLE [US]; MINNESOTA MINING & MFG [US]) 7 December 1988 (1988-12-07)
D4: GB-A-2 113 731 (KIMBERLY CLARK LTD) 10 August 1983 (1983-08-10)
D5: US-A-4 100 324 (ANDERSON RICHARD A ET AL) 11 July 1978 (1978-07-11)
D6: US-A-5 476 616 (SCHWARZ ECKHARD C A [US]) 19 December 1995 (1995-12-19)
D7: US-A-3 954 361 (PAGE ROBERT EDWARD) 4 May 1976 (1976-05-04)
D8: WO 03/080905 A (NANO TECHNICS CO LTD [KR]; KIM YONG MIN [KR]; SUNG YOUNG BIN [KR]; JAN) 2 October 2003 (2003-10-02)
D9: US 2005/056956 A1 (ZHAO RONGGUO [US] ET AL) 17 March 2005 (2005-03-17)
D10: WO 2005/106085 A (BIAX FIBERFILM CORP [US]; ZHAO RONGGUO [US]) 10 November 2005 (2005-11-10)

1. Clarity (Article 6 PCT)

1.1 The relative term "substantially parallel" used in claim 1 has no well-recognised meaning and leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of said claim unclear, Article 6 PCT.

Further unclarity regarding this term is generated by the explanation given in the description (p.17), namely that the arrangement that - according to claim 1 - has to be "parallel or substantially parallel" can be set at any angle in between 0° and "less than 30°". As an arrangement forming an angle of e.g. 29° can hardly be considered to be

"substantially parallel", the meaning of the term is unclear.

1.2 Claim 1 is not supported by the description as required by Article 6 PCT, as its scope is broader than justified by the description and drawings. The reasons therefor are the following:
Claim 1 is directed to a process of making a fibrous structure comprising the step d) "combining filaments with **solid additives**".
In the paragraph "Fibrous Structure" (description; page 8-9) it is stated that "the fibrous structures of the invention exhibit a pore volume distribution unlike pore volume distributions of other known fibrous structures". It is further stated that a "fibrous structure according to the present invention exhibiting a bi-modal pore volume distribution... ... provides beneficial absorbent capacity and absorbent rate."
However, the only example given in the description is a co-formed fibrous structure consisting of melt-blown PP-fibres and **wood pulp**.
This only example is not sufficient to support the much broader, general term "solid additives" used claim 1, since it is highly implausible that the claimed process will work with solid additives in general: The size and shape of the additives will certainly greatly influence the pore volume distribution. The absorbency (or lack of absorbency) will determine the absorbent capacity of the fibrous structure. Any convincing evidence that the process is applicable to solid additives in general is lacking in the description. Thus, claim 1 is not supported in the description as required by Article 6 PCT.

2. Inventive Step (Article 33(2) PCT)

Furthermore, the above-mentioned lack of clarity notwithstanding, the subject-matter of claim 1 does not involve an inventive step in the sense of Article 33(3) PCT, and therefore the criteria of Article 33(1) PCT are not met.

The document D6 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document):

A process for making a fibrous structure
(claim 5)

the process comprising the steps of

a) providing a die comprising one or more filament forming holes,

(claim 5; fig. 1-4)

wherein one or more fluid-releasing holes are associated with one filament-forming hole such that a fluid exiting the fluid releasing hole is parallel or substantially parallel to an exterior surface of a filament exiting the filament-forming hole

(claim 5, fig. 1-4; col.1, l. 24-28)

b) supplying at least a first polymer to the die;

(claim 5)

c) producing a plurality of filaments comprising the first polymer from the die;

(claim 5)

e) collecting the mixture on a collection device to produce a fibrous structure

(claim 5)

The subject-matter of claim 1 therefore differs from this known process in that it comprises an additional step, namely step d):

- combining the filaments with solid additives to form a mixture, e.g. creating a "co-formed" fibrous structure

The problem to be solved by the present invention may therefore be regarded as modifying the process for making a fibrous structure disclosed in D6 so that a fibrous structure with additional properties or functionalities, e.g. absorbency, can be obtained.

The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons.

The step of combining spun filaments with solid additives, e.g. particles, staple fibres or wood pulp, to form a mixture - the so-called co-forming-process - is well known to the skilled person and has been disclosed in documents D1-D5.
The skilled person is aware of the possibilities of the co-forming-process, namely to add additional properties to a spun web, i.e properties, that the spun web alone does not possess.

If faced with the problem of modifying the process for making a fibrous structure disclosed in D6 so that the process be suitable of providing fibrous structures with new properties, the skilled person would simply apply the teaching of documents D1-D5

thereby arriving at a process according to claim 1.

Hence, the subject-matter of claim 1 does not involve an inventive step in the sense of Article 33(3) PCT.

3. Dependent claims

The dependent claims do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step. The reasons are as follows:

3.1 The subject matter of claim 2 is known from D6 (claim 1).

3.2 The subject matter of claim 3 is known from D1 (Fig.1).

3.3 The subject matter of claim 4 is known from D6, (col.2, l.46; col.1, l.31-38)

3.4 The subject matter of claims 5, 8, 9, 10, 12, 13 & 14 is conventional in the art. Furthermore, the term "closely coupled" in claim 14 is not clear.

3.5 The subject matter of claim 6 is known from D9 (claim 1).

3.6 The subject matter of claim 7 is known from D4 (claim 15) or D5 (claim 1).

3.7 Claim 11 does not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not defined. The claim attempts to define the subject-matter in terms of the result to be achieved. Such a definition is only allowable under the conditions elaborated in the PCT-Guidelines section IV, 5.35, namely that the invention can only be defined in such terms. In this instance, however, such a formulation is not allowable because it appears possible to define the subject-matter in more concrete terms, viz. in terms of how the effect is to be achieved.

4. Miscellaneous

4.1 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1, D4, D5 & D6 is not mentioned in the description, nor are these documents identified therein.

4.2 The expression "hereby incorporated by reference" on page 5 should be deleted from the description.

4.3 The vague and imprecise statement in the description on page 27 relating to the "spirit of the invention" implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in a lack of clarity of the claims (Article 6 PCT) when the description is used to interpret the claims (see PCT Guidelines, Section IV, 5.30). This statement should therefore be amended to remove this inconsistency.

4.4 The units "°F", "inch" and "fpm" do not meet the requirements of the PCT and should be replaced by the appropriate SI units (see PCT Guidelines, Section IV, 4.24). The present expressions should, however, be retained in parentheses after the replacement expressions.

Possible steps after receipt of the international search report (ISR) and written opinion of the International Searching Authority (WO-ISA)

General information	For all international applications filed on or after 01/01/2004 the competent ISA will establish an ISR. It is accompanied by the WO-ISA. Unlike the former written opinion of the IPEA (Rule 66.2 PCT), the WO-ISA is not meant to be responded to, but to be taken into consideration for further procedural steps. This document explains about the possibilities.
Amending claims under Art. 19 PCT	Within 2 months after the date of mailing of the ISR and the WO-ISA the applicant may file amended claims under Art. 19 PCT directly with the International Bureau of WIPO. The PCT reform of 2004 did not change this procedure. For further information please see Rule 46 PCT as well as form PCT/ISA/220 and the corresponding Notes to form PCT/ISA/220.
Filing a demand for international preliminary examination	In principle, the WO-ISA will be considered as the written opinion of the IPEA. This should, in many cases, make it unnecessary to file a demand for international preliminary examination. If the applicant nevertheless wishes to file a demand this must be done before expiry of 3 months after the date of mailing of the ISR/WO-ISA or 22 months after priority date, whichever expires later (Rule 54bis PCT). Amendments under Art. 34 PCT can be filed with the IPEA as before, normally at the same time as filing the demand (Rule 66.1 (b) PCT). If a demand for international preliminary examination is filed and no comments/amendments have been received the WO-ISA will be transformed by the IPEA into an IPRP (International Preliminary Report on Patentability) which would merely reflect the content of the WO-ISA. The demand can still be withdrawn (Art. 37 PCT).
Filing informal comments	After receipt of the ISR/WO-ISA the applicant may file informal comments on the WO-ISA directly with the International Bureau of WIPO. These will be communicated to the designated Offices together with the IPRP (International Preliminary Report on Patentability) at 30 months from the priority date. Please also refer to the next box.
End of the international phase	At the end of the international phase the International Bureau of WIPO will transform the WO-ISA or, if a demand was filed, the written opinion of the IPEA into the IPRP, which will then be transmitted together with possible informal comments to the designated Offices. The IPRP replaces the former IPER (international preliminary examination report).
Relevant PCT Rules and more information	Rule 43 PCT, Rule 43bis PCT, Rule 44 PCT, Rule 44bis PCT, PCT Newsletter 12/2003, OJ 11/2003, OJ 12/2003

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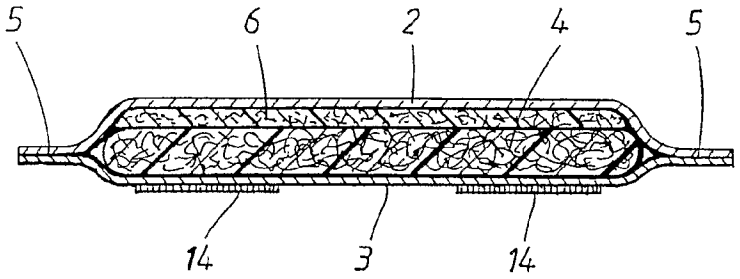
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,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

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

Published:
— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ABSORBENT ARTICLE WITH IMPROVED SURFACE MATERIAL



(57) Abstract: An absorbent article (1) comprising an absorbent body (4), a liquid-permeable covering layer (2) arranged over a first surface on the absorbent body (4), and a liquid-permeable liquid-transfer layer (6) arranged between the absorbent body (4) and the liquid-permeable covering layer (2). The liquid-permeable covering layer (2) consist of a nonwoven material with a pore volume distribution curve with a maximum at a pore radius greater than or equal to 50 µm and with a wetting anagle of at least 120°, and the liquid-transfer layer (6) consist of fibrous layer with a pore volume distribution curve with a maximum at a pore radius of from 105 to 325 µm.

WO 2004/098474 A1

ABSORBENT ARTICLE WITH IMPROVED SURFACE MATERIAL

TECHNICAL FIELD

The invention relates to an absorbent article comprising an absorbent body, a liquid-permeable covering layer arranged over a first surface on the absorbent body, and a liquid-permeable liquid-transfer layer arranged between the absorbent body and the liquid-permeable covering layer.

BACKGROUND ART

Disposable absorbent articles, such as diapers, incontinence pads, bed protectors, sanitary towels etc., which are intended to receive and absorb bodily discharges such as urine, menstrual blood and motions have been well known for a long time. Absorbent articles of this kind usually comprise a liquid-permeable covering layer and a liquid-impermeable covering layer, with an absorbent body enclosed between the covering layers. Especially in the case of urine absorption, it is essential in this connection that the absorbent article and in particular the liquid-permeable covering layer is capable of receiving and rapidly admitting liquid. It is also important for the surface of the article to be kept as dry as possible even after wetting and for liquid which has passed into the article to remain there and not leak back out towards the body of the user. This phenomenon is usually referred to as rewetting and is highly undesirable.

The requirements for rapid admission of liquid into an absorbent article and also a dry surface and low rewetting are in part incompatible. A close liquid-permeable covering material with fine pores therefore affords good protection against rewetting but leads to the liquid-admission capacity being low. This often results in liquid not being taken up by the absorbent article but instead running out on the surface of the article and causing leakage.

Moreover, a fine-pored material tends to retain liquid after wetting, which makes the surface of the article feel wet. A coarse-pored surface material has a good capacity for rapidly admitting liquid and does not to any great extent retain liquid in the pores. On the other hand, such a material offers poor protection against rewetting. A loose material moreover has a low masking effect, which means that coloured bodily fluid such as menstrual blood is clearly visible through the covering material.

In order to remedy the abovementioned problems, it has been proposed to combine different types of liquid-permeable material. EP 0 312 118, for example, describes an absorbent article with a liquid-permeable covering layer arranged over the absorbent body of the article and with a likewise liquid-permeable transport layer arranged between the surface layer and the absorbent body. The transport layer has lower hydrophilicity than the absorbent body and moreover has an effective average pore size which is smaller than the pore size in the surface layer.

US 5,968,855 describes a nonwoven material which is stated to have good liquid-transport properties and can be used as a transport layer in an absorbent article.

In spite of great efforts having been made in order to improve the liquid-permeable covering layer on an absorbent article, it has hitherto not been possible for an optimum combination of covering material and liquid-transfer material to be presented. A main object of the invention is therefore to offer an improved surface material combination, which makes possible both rapid liquid admission and a dry surface with low rewetting.

DISCLOSURE OF INVENTION

In accordance with the invention, an absorbent article of the kind referred to in the introduction has therefore been produced, which article is characterized mainly in that the liquid-permeable covering layer consists of a nonwoven material with a pore volume distribution curve with a maximum at a pore radius greater than or equal to 50 μm and with a wetting angle of at least 120°, and also in that the liquid-transfer layer consists of a fibrous layer with a pore volume distribution curve with a maximum at a pore radius of from 105 to 325 μm.

Advantageously, the liquid-permeable covering layer has a pore volume distribution curve with a maximum at a pore radius greater than or equal to 55 μm and preferably with a maximum at a pore radius of from 55 μm to 60 μm.

Furthermore, the liquid-permeable covering layer can consist of fibres with a fibre fineness of at least 5 dtex.

The liquid-permeable covering layer suitably has a basis weight of at most 15 g/m^2.

An especially advantageous material for use as a liquid-permeable covering layer has been found to be a relatively hydrophobic spunbond material. Such a material does not spread liquid in the layer, which carded nonwoven materials have a tendency to do.

Furthermore, it is advantageous if the liquid-transfer layer has a pore volume distribution curve with a maximum at a pore radius of from 115 μm to 185 μm and preferably with a maximum at a pore radius of from 135 μm to 155 μm.

It is furthermore suitable if the liquid-transfer layer has a cumulative pore volume in the pore size range 110 to 350 μm which is more than 60% of the total pore volume and preferably more than 65% of the total pore volume. In this connection, it is preferred if the liquid-transfer layer has a cumulative pore volume in the pore size range 120 to 230 μm which is more than 40% of the total pore volume and preferably more than 50% of the total pore volume, and it is most preferable if the liquid-transfer layer has a cumulative pore volume in the pore size range 150 to 180 μm which is more than 15% of the total pore volume and preferably more than 20% of the total pore volume.

The liquid-transfer layer suitably consists of fibres with a fibre fineness of from 6.7 to 11 dtex.

Furthermore, the liquid-transfer layer advantageously has a basis weight of from 10 gsm to 100 gsm, preferably from 25 gsm to 60 gsm, and a bulk of at least 15 cm^3/g measured at a load of 0.1 kPa.

It has also been found to be advantageous if the liquid-transfer layer has a pore volume distribution curve with a maximum located at from 155 μm to 165 μm in combination with a cumulative liquid volume of 0.1 mm^3/mg of sample and preferably 0.5 mm^3/mg or more in pores with radii smaller than or equal to 25 μm.

The absorbent article according to the invention is, for example, a diaper, an incontinence pad, a sanitary towel, a bed protector or the like and suitably comprises a liquid-impermeable covering layer located over a second surface on the absorbent body opposite the first surface, where the liquid-permeable covering layer and the liquid-impermeable covering layer together enclose the absorbent body.

With regard to both surface dryness and liquid take-up time, it is important, as mentioned above, to use open materials with relatively large pores. It was not previously known, however, which degree of openness gives the best combination of liquid admission and surface dryness.

By virtue of the invention, it is possible to produce absorbent articles with extremely good liquid-handling properties. With knowledge of the nature of a certain material combination, it is also possible to predict how the material combination will behave when it is used on an absorbent article.

As far as dryness is concerned, the properties of both the liquid-permeable covering layer and the liquid-transfer layer are important, although the properties of the liquid-transfer layer have the greatest influence on the dryness. In this connection, the pore volume distribution (PVD) in particular is significant.

DESCRIPTION OF FIGURES

The invention will be described below with reference to the figures shown in the accompanying drawings, in which:

Fig. 1 shows an incontinence pad with a surface material according to the invention;

Fig. 2 shows a section along the line II-II through the incontinence pad in Figure 1;

Fig. 3 shows a drop of liquid arranged on a surface;

Fig. 4 shows a curve chart showing the pore volume distribution for liquid-permeable covering materials;

Fig. 5 shows a curve chart showing the pore volume distribution for liquid-transfer materials;

Fig. 6 shows results of sensory dryness measurements, and

Fig. 7 shows results of sensory dryness measurements.

DETAILED DESCRIPTION OF THE INVENTION

The incontinence pad 1 shown in Figures 1 and 2 comprises a first, liquid-permeable covering layer 2, a second, liquid-impermeable covering layer 3, and an absorbent body 4 enclosed between the covering layers. The two covering layers 2, 3 have a slightly greater extent in the plane than the absorbent body 4 and project beyond the absorbent body 4 around its entire periphery. The covering layers 2, 3 are interconnected within the projecting portions 5, for example by means of gluing or welding using heat or ultrasound.

In accordance with the invention, the liquid-permeable covering layer 2 consists of a layer of nonwoven material. Especially preferred nonwoven materials are spunbond materials.

The liquid-impermeable covering layer 3 can consist of a liquid-impermeable plastic film, a nonwoven layer which has been coated with a liquid-blocking material, or another flexible material layer which is capable of resisting liquid penetration. In general, it is an advantage if the liquid-impermeable covering layer 3 has a certain breathability, that is to say allows the passage of water vapour through the layer 3.

Furthermore, a liquid-permeable liquid-transfer layer 6 is arranged between the liquid-permeable covering layer 3 and the absorbent body 4. Such a liquid-transfer layer 6 consists of a bulky fibrous material with large internal volume. Suitable materials for the liquid-transfer layer 6 are various types of preferably bonded fibre waddings, for example carded, adhesive-bonded or thermally bonded wadding.

The incontinence pad 1 has an elongate shape, with wider end portions 7, 8 and a narrower crotch portion 9. The crotch portion 9 is the part of the incontinence pad 1 which is intended to be arranged in the crotch of the wearer during use and serve as the receiving surface for the bodily fluid which is discharged into the incontinence pad 1. The incontinence pad 1 also has two inwardly curved, longitudinal side edges 10, 11 and two end edges 12, 13.

Arranged on the outside of the liquid-impermeable covering layer 3 is a fastening means 14 in the form of two transverse areas of self-adhesive glue. Before use, the fastening means 14 is suitably covered by a removable protective layer (not shown in the drawing) of release-agent-treated paper, plastic film or the like. Instead of the glue pattern in the form of two transverse glue areas shown, a number of other glue patterns can be used, such as one or more longitudinal areas, dots, full coating etc. Alternatively, other types of fastening means can be used, such as hook and loop surfaces, press studs, belts, special briefs or the like.

An incontinence pad 1 of the kind shown in the figures is primarily intended for use by people with relatively mild incontinence and is therefore of such a size that it can easily be accommodated inside a pair of ordinary briefs. In this connection, the fastening means 14 serves to hold the incontinence pad in place inside the briefs during use.

The absorbent body 4 is shown diagrammatically and consists of absorbent material. The absorbent body 4 can comprise one or more layers which can be the same or differ with regard to composition, shape, size and positioning in the incontinence pad.

Absorption materials which can be used are cellulose fibres, the most common in this respect being cellulose fluff pulp, various types of absorbent foam material, and also what are known as superabsorbents, which are polymer materials which absorb liquid corresponding to many times their own weight while forming a liquid-containing gel. Superabsorbents are available in the form of fibres, particles, granules, film etc. and can be mixed with other absorption materials or be arranged in separate layers or areas.

Although, for the purpose of illustration, the invention has been described here on the basis of an incontinence pad, it is of course the case that other types of absorbent article, such as diapers for children and adults, bed protectors, seat protectors, sanitary towels or the like are also covered by the invention. Absorbent articles such as, for example, diapers can comprise further components which have not been described here and which are not significant for the invention. Examples of such components are elastic means, fastening-together means, wet indicators, raised portions, side barriers etc.

In order to determine the properties of different liquid-permeable covering materials and liquid-transfer layers, and to assess the suitability of different material combinations with regard to dryness and liquid-admission capacity, a number of measurements were performed.

MEASURING METHODS

Determination of wetting angle: DAT (Dynamic Absorption Tester)

In order to determine the degree of hydrophobicity of suitable liquid-permeable covering materials, the following method was used:

A drop of liquid is applied to a test material while a video system films the procedure. Depending on the nature of the test material, the drop may remain lying on top of the material or be absorbed. By measuring the base (d) and the height (h) as shown in Figure 3, the contact angle θ formed between the liquid and the material can be calculated with the aid of the following equation:

$$\tan\frac{\theta}{2} = \frac{2 \cdot h}{d}$$

The contact angle θ is stated as a function of the time, t, which passed from the drop coming into contact with the surface of the test material. In the examples below, the contact angle is shown at t = 0.1 s, when all the drops were still lying on the surface.

All the test materials were conditioned for at least 4 h before measurement (23°C; 50% relative humidity). The measurements were carried out on a Fibro 1100 DAT system from Fibro System AB, Sweden, in accordance with the associated manual (software version: DAT WinNT 3.0). Water was used as the test liquid and the drop volume was 5 µl. 25 drops were measured for each material.

The materials for which the contact angle was determined were:

N1, which was a spunbond nonwoven with a weight per unit area of 17.9 g/m^2 and a fibre fineness of 3.2 dtex.

N2, which was a spunbond nonwoven with a weight per unit area of 14.9 g/m^2 and a fibre fineness of 3.8 dtex.

N3, which was a spunbond nonwoven with a weight per unit area of 15.9 g/m^2 and a fibre fineness of 3.7 dtex.

N4, which was a spunbond nonwoven with a weight per unit area of 11.3 g/m^2 and a fibre fineness of 4.9 dtex.

N5, which was a spunbond nonwoven with a weight per unit area of 15 g/m^2 and a fibre fineness of 5 dtex.

N7, which was a spunbond nonwoven with a weight per unit area of 13.3 g/m^2 and a fibre fineness of 5.4 dtex.

N8, which was a spunbond nonwoven with a weight per unit area of 15 g/m^2 and a fibre fineness of 5.8 dtex.

N9, which was a spunbond nonwoven with a weight per unit area of 13.2 g/m^2 and a fibre fineness of 7.1 dtex.

N10, which was a spunbond nonwoven with a weight per unit area of 22 g/m^2 and a fibre fineness of 2.3 dtex.

N11, which was a spunbond nonwoven with a weight per unit area of 16 g/m^2 and a fibre fineness of 3.6 dtex.

The result of the measurements is indicated in Table 1.

Table 1: Wetting angles

Material	Contact angle (t = 0.1 s)	Number of drops measured
N1	125	25
N2	124	25
N3	116	25
N4	123	25
N5	123	25

N6	121	25
N7	114	25
N8	120	25
N9	123	25
N10	0	25
N11	122	25

DETERMINATION OF PORE VOLUME DISTRIBUTION

The pore volume distribution for different liquid-permeable covering materials and liquid-transfer materials was determined using the method described in *Journal of Colloid and Interface Science* 162, *163-170 (1994).* The method used is based on measurements of the quantity of liquid which can be pressed out of a porous material ("receding mode") at a certain pressure, and the result of the measurement is presented in the form of a curve in a chart where the curve illustrates the overall pore volume for a given pore radius.

Running conditions for liquid-permeable covering layer (nonwoven)

In the measurements, n-hexadecane (≥99%, Sigma H-0255) was used as the measuring liquid. Measurement was carried out on circular samples with an area of 25.5 cm^2. The sample was placed in the chamber and was saturated with the test liquid. Millipore 0.22 μm cat. no. GSWP 09000 was used as the membrane. In order to achieve good contact between the sample and the membrane, a load covering the whole sample surface was placed on top of the sample. In order to avoid measuring pores between the

sample surface and the weight, a large-pore polyurethane foam (which does not hold liquid) was moreover placed between the sample and the weight applied. The total load on the sample was 0.15 kPa. In order for it to be possible to record the remaining liquid, the sample was weighed before and immediately after running was completed.

The equilibrium speed, that is to say the speed when the weight change at the selected pore radius has decreased to an insignificant level, was set at 2 mg/min, and the measuring time during which the weight change was recorded was set at 30 seconds.

Measurements were carried out at pressures corresponding to the following pore radii [μm]:

500	400	300	250	225	200
175	150	125	110	100	90
80	70	60	55	50	45
40	35	40	25	20	15
10	8	6	4	2	

In addition to measurement on samples, what is known as a blank run was carried out. In a blank run, only foam and load are placed in the test chamber. Measurement is performed in the same way and with the same running conditions as when samples are measured. The blank run is then subtracted from the test run before further processing of raw data.

<u>Running conditions for liquid-transfer layer (wadding)</u>

In the measurements, a 0.1% w/w solution of Triton TX-100 (Calbiochem - 648462) was used as the measuring liquid. Measurement was carried out on circular samples with an area of 25.5 cm^2. The sample was placed in the chamber and was saturated with the test liquid. Millipore 0.22 μm cat. no.

GSWP 09000 was used as the membrane. In order to achieve good contact between the sample and the membrane, a load covering the whole sample surface was placed on top of the sample. In order to avoid measuring pores between the sample surface and the weight, a large-pore polyurethane foam (which does not hold liquid) was moreover placed between the sample and the weight applied. The total load on the sample was 0.57 kPa.

The equilibrium speed, that is to say the speed when the weight change at the selected pore radius has decreased to an insignificant level, was set at 5 mg/min, and the measuring time during which the weight change was recorded was set at 30 seconds.

Measurements were carried out at pressures corresponding to the following pore radii [μm]:

700	600	500	400	350	300
275	250	240	230	220	210
200	190	180	170	160	150
140	130	120	110	100	90
80	70	60	50	40	30
25	20	15	10	5	

In addition to measurement on samples, a blank run was carried out. In a blank run, only foam and load are placed in the test chamber. Measurement is performed in the same way and with the same running conditions as when samples are measured. The blank run is then subtracted from the test run before further processing of raw data.

The wadding materials for which the pore volume distribution was determined were:

V1, which was an adhesive-bonded polyester wadding with a weight per unit area of 43.0 g/m^2 and a fibre fineness of 5.3 dtex.

V2, which was an adhesive-bonded polyester wadding with a weight per unit area of 34.1 g/m^2 and a fibre fineness of 6.7 dtex.

V3, which was an adhesive-bonded polyester wadding with a weight per unit area of 50.4 g/m^2 and a fibre fineness of 6.7 dtex.

V4, which was an adhesive-bonded polyester wadding with a weight per unit area of 28.3 g/m^2 and a fibre fineness of 7.7 dtex.

V5, which was an adhesive-bonded polyester wadding with a weight per unit area of 38.0 g/m^2 and a fibre fineness of 7.7 dtex.

V6, which was an adhesive-bonded polyester wadding with a weight per unit area of 59.9 g/m^2 and a fibre fineness of 7.7 dtex.

V8, which was an adhesive-bonded polyester wadding with a weight per unit area of 50.7 g/m^2 and a fibre fineness of 8.8 dtex.

V9, which was an adhesive-bonded polyester wadding with a weight per unit area of 61.7 g/m^2 and a fibre fineness of 8.8 dtex.

V10, which was an adhesive-bonded polyester wadding with a weight per unit area of 50.0 g/m^2 and a fibre fineness of 6.7 dtex.

The results of the measurements are illustrated in the form of pore volume distribution curves in Figures 4 and 5.

Figure 4 shows the pore volume distribution for different liquid-permeable covering materials. The samples on which measurements were performed were N1-N4, N7 and N9-N10, which were described above in connection with determination of hydrophobicity/contact angle.

The best pore volume distribution is that demonstrated by N9, but N4 is also very good, and the other tested materials show an acceptable pore volume distribution.

Figure 5 illustrates the results of the measurements on different liquid-transfer materials, V1-V9, and also a reference, V10.

Table 2 below shows the liquid percentage within the pore radius ranges 110-350 μm, 120-230 μm and 150-180 μm of the total cumulative volume in the range 0-700 μm for the samples V1-V10:

Table 2: Liquid percentage for different pore radius ranges

Pore radius range:	110-350 μm	120-230 μm	150-180 μm
V1	57.9	39.3	10.4
V2	49.1	23.2	6.6
V3	51.6	17.9	4.4
V4	64.4	41.5	15.5
V5	64.0	47.2	18.6
V6	66.5	52.1	21.3
V8	46.3	21.7	6.0
V9	43.3	31.7	8.8
V10	39.8	27.0	7.0

The liquid percentage within the ranges concerned provides a measure of how well defined a curve peak located within the range is.

Dryness determination

The perceived dryness of the different material combinations was determined by sensory evaluation.

The test liquid was synthetic urine, SUM, made up as follows: 0.66 g/l magnesium sulphate, 4.47 g/l potassium chloride, 7.60 g/l sodium chloride, 18.00 g/l urea, 3.54 g/l potassium dihydrogen phosphate, 0.745 g/l sodium hydrogen phosphate, 1.00 g/l 0.1% triton, 0.4 g/l Nykockin (colour) and the rest de-ionized water. The test liquid was applied to the samples in 3 doses of 100 ml, with intervals of 20 minutes between doses. The dryness evaluation was carried out 20 minutes after the last dose was added.

Different sensory methods were used in order to characterize the degree of dryness of the samples concerned:

Method 1: A panel consisting of people well informed of product type, evaluation procedure and attribute asked for has to place in order up to 10 samples on each occasion. All the samples are evaluated in a number of different combinations with other samples. The samples are evaluated blind. The ordering results are put together, and the samples are grouped so that each group consists of samples with similar dryness. For detailed information about the test procedure, see Sensory Evaluation Techniques, 2nd edition, ISBN 0-8493-4280-5. Authors: Meilgaard, Cicille & Carr. Pages 117-119 are of particular interest.

Method 2: The samples within one and the same group are arranged in random order and evaluated by two expert evaluators. The expert evaluators are well informed of product type, evaluation procedure and attribute asked for. Samples within the same group are placed in order according to increasing degree of dryness. New groups are then formed from two similar groups in such a way that the driest samples from a wetter group and the wetter samples from a drier group are brought together, presented in random order and placed in order according to increasing degree of dryness. When all the original and newly formed groups have been placed in order in increasing degree of dryness, all the samples included are evaluated in the

order produced. In the tests reported below, the samples were evaluated blind on all occasions.

As the samples consist of mutually different materials and material combinations, where the materials in themselves vary slightly, depending on where the sample is taken from, all evaluations were carried out several times.

Results of dryness evaluations, performed according to method 2 above, for different combinations of surface material (NX) and underlying wadding (VX) are shown in Figures 6 and 7.

LIQUID-ADMISSION SPEED

The capacity for rapidly taking up liquid and allowing it to pass through was measured for different material combinations. The measurements were carried out in accordance with the ART method which is described in detail in British patent specification GB 2 339 477.

The ART method is based on measuring the time it takes for an absorbent structure to receive a given quantity of liquid from a vessel, the quantity of liquid being measured continuously by measuring the quantity of liquid which is carried away from the vessel.

The results for the different material combinations tested are presented below in Table 3, which shows a comparison on a percentage basis of the admission times which were required to carry away the added quantity of liquid (SUM, made up as above) for different combinations of surface material and liquid-transfer layer, where the admission time for Sample 5 is set at 100 for doses 1, 2 and 3. The test liquid was added at 100 ml/dose with an 8 ml liquid column and at a pressure of 4.5 kg.

Table 3: Liquid-admission time

	N9+V6	N9+V2	N3+V6	N3+V4	N10+V10	N9+V1
ART	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
1st dose	96	112	92	197	100	84
2nd dose	100	123	99	121	100	80
3rd dose	96	123	109	126	100	93

The invention is not to be considered as being limited to the illustrative embodiments described here. The invention therefore comprises all types of absorbent article intended for absorption of bodily fluids such as urine, loose motions and blood.

CLAIMS

1. An absorbent article (1) comprising an absorbent body (4), a liquid-permeable covering layer (2) arranged over a first surface on the absorbent body (4), and a liquid-permeable liquid-transfer layer (6) arranged between the absorbent body (4) and the liquid-permeable covering layer (2), characterized in that the liquid-permeable covering layer (2) consists of a nonwoven material with a pore volume distribution curve with a maximum at a pore radius greater than or equal to 50 μm and with a wetting angle of at least 120°, and also in that the liquid-transfer layer (6) consists of a fibrous layer with a pore volume distribution curve with a maximum at a pore radius of from 105 to 325 μm.

2. An absorbent article according to Claim 1, characterized in that the liquid-permeable covering layer (2) has a pore volume distribution curve with a maximum at a pore radius greater than or equal to 55 μm.

3. An absorbent article according to Claim 2, characterized in that the liquid-permeable covering layer (2) has a pore volume distribution curve with a maximum at a pore radius of from 55 μm to 60 μm.

4. An absorbent article according to any one of the preceding claims, characterized in that the liquid-permeable covering layer (2) consists of fibres with a fibre fineness of at least 5 dtex.

5. An absorbent article according to any one of the preceding claims, characterized in that the liquid-permeable covering layer (2) has a basis weight of at most 15 g/m^2.

6. An absorbent article according to any one of the preceding claims, characterized in that the liquid-permeable covering layer (2) consists of a spunbond nonwoven.

7. An absorbent article according to any one of the preceding claims, characterized in that the liquid-transfer layer (6) consists of a polyester wadding bonded with a binding agent.

8. An absorbent article according to any one of the preceding claims, characterized in that the liquid-transfer layer (6) has a pore volume distribution curve with a maximum at a pore radius of from 115 μm to 185 μm.

9. An absorbent article according to Claim 8, characterized in that the liquid-transfer layer (6) has a pore volume distribution curve with a maximum at a pore radius of from 135 μm to 155 μm.

10. An absorbent article according to any one of the preceding claims, characterized in that the liquid-transfer layer (6) has a cumulative pore volume in the pore size range 110 to 350 μm which is more than 60% of the total pore volume and preferably more than 65% of the total pore volume.

11. An absorbent article according to Claim 10, characterized in that the liquid-transfer layer (6) has a cumulative pore volume in the pore size range 120 to 230 μm which is more than 40% of the total pore volume and preferably more than 50% of the total pore volume.

12. An absorbent article according to Claim 11, characterized in that the liquid-transfer layer (6) has a cumulative pore volume in the pore size range

150 to 180 μm which is more than 15% of the total pore volume and preferably more than 20% of the total pore volume.

13. An absorbent article according to any one of the preceding claims, characterized in that the liquid-transfer layer (6) consists of fibres with a fibre fineness of from 6.7 to 11 dtex.

14. An absorbent article according to any one of the preceding claims, characterized in that the liquid-transfer layer (6) has a basis weight of from 10 gsm to 100 gsm, preferably from 25 gsm to 60 gsm, and a bulk of at least 15 cm^3/g measured at a load of 0.1 kPa.

15. An absorbent article according to any one of the preceding claims, characterized in that the liquid-transfer layer (6) has a pore volume distribution curve with a maximum located at from 155 μm to 165 μm in combination with a cumulative liquid volume of 0.1 mm^3/mg of sample and preferably 0.5 mm^3/mg or more in pores with radii smaller than or equal to 25 μm.

16. An absorbent article according to any one of the preceding claims, characterized in that the article comprises a liquid-impermeable covering layer (3) located over a second surface on the absorbent body (4) opposite the first surface, and in that the liquid-permeable covering layer (2) and the liquid-impermeable covering layer (3) together enclose the absorbent body (4).

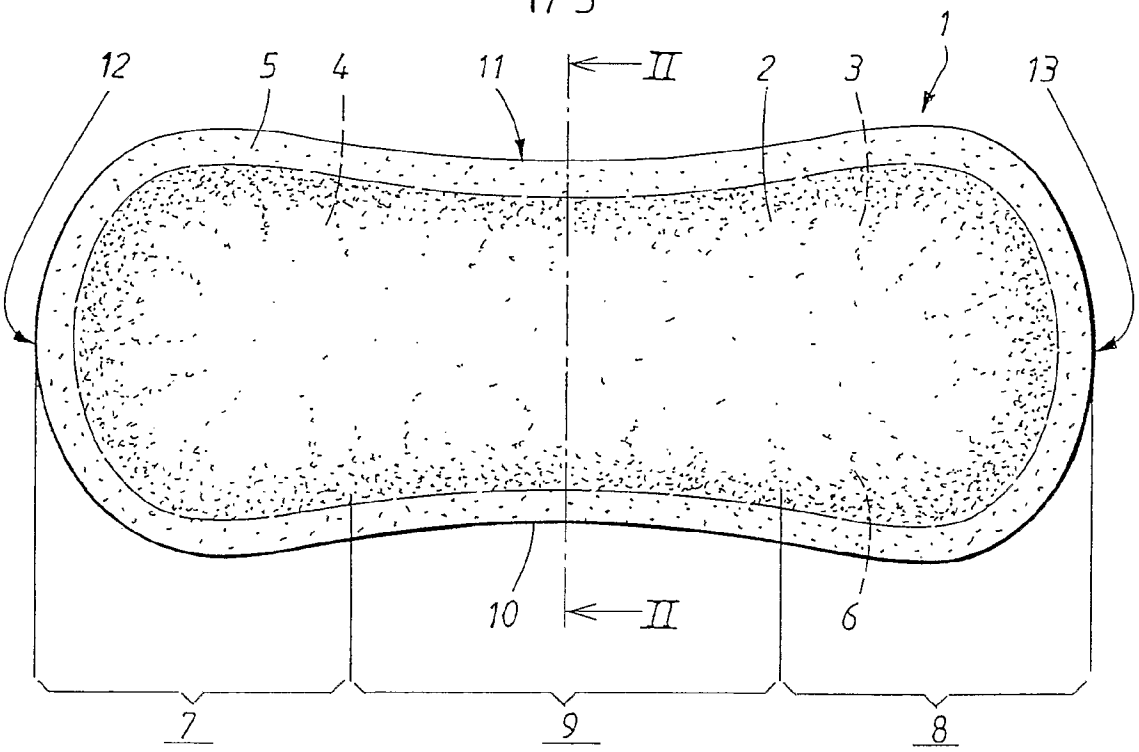


FIG.1

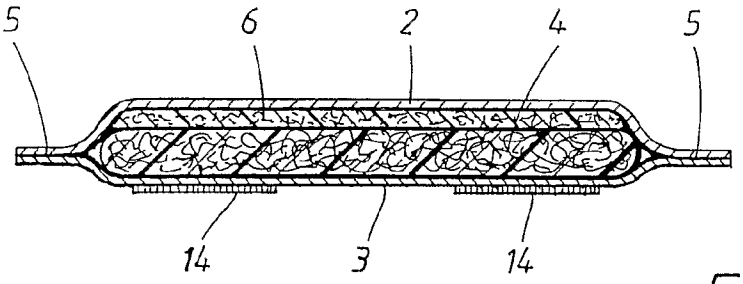


FIG.2

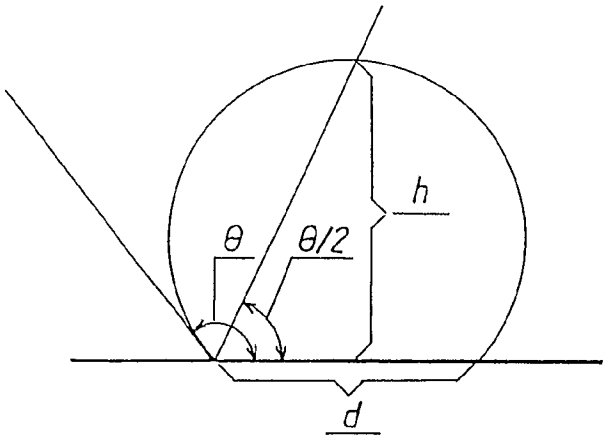


FIG.3

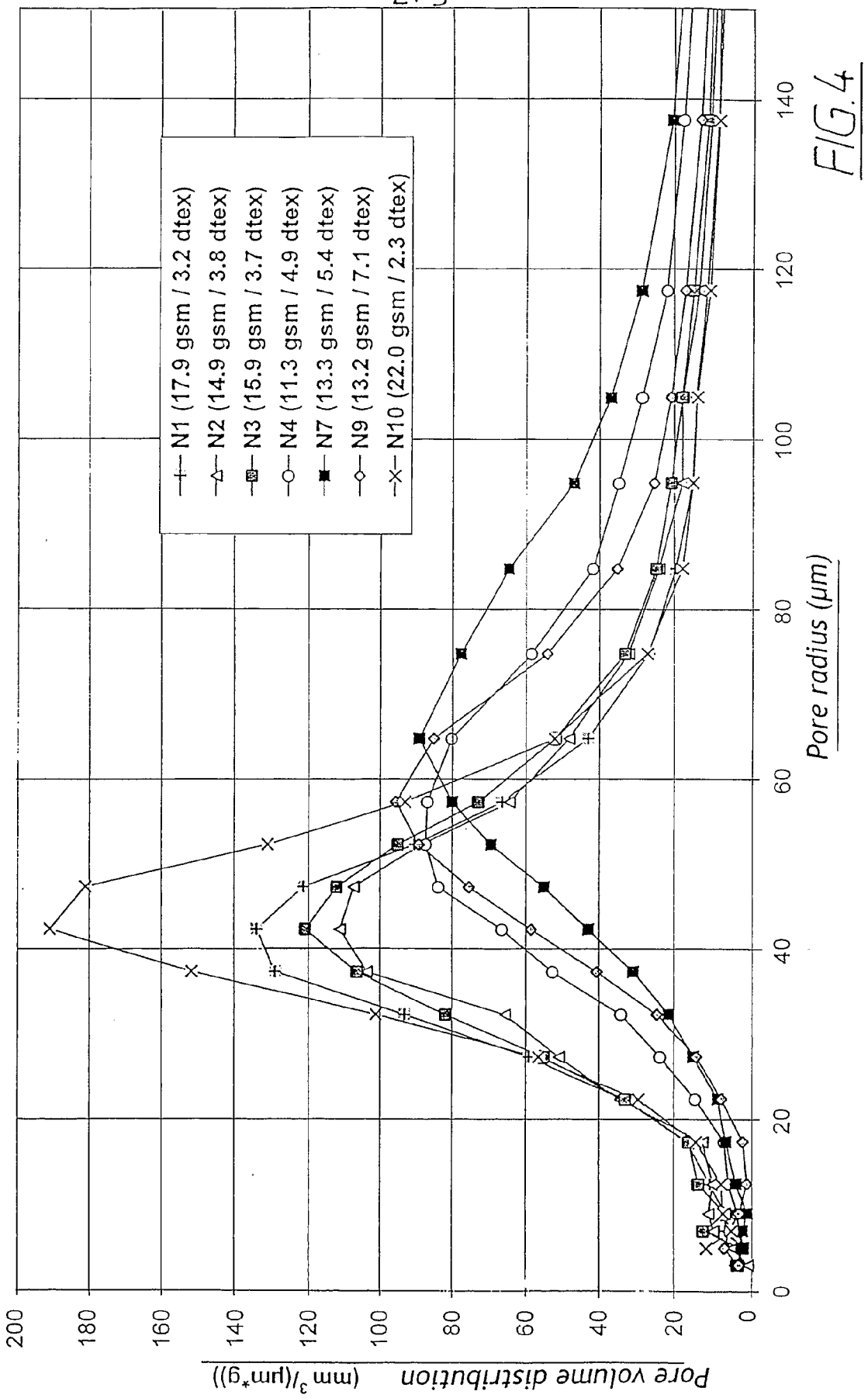

N1 (17.9 gsm / 3.2 dtex)
N2 (14.9 gsm / 3.8 dtex)
N3 (15.9 gsm / 3.7 dtex)
N4 (11.3 gsm / 4.9 dtex)
N7 (13.3 gsm / 5.4 dtex)
N9 (13.2 gsm / 7.1 dtex)
N10 (22.0 gsm / 2.3 dtex)
Pore volume distribution (mm³/(µm*g))
Pore radius (µm)
0
20
40
60
80
100
120
140
160
180
200

FIG.4

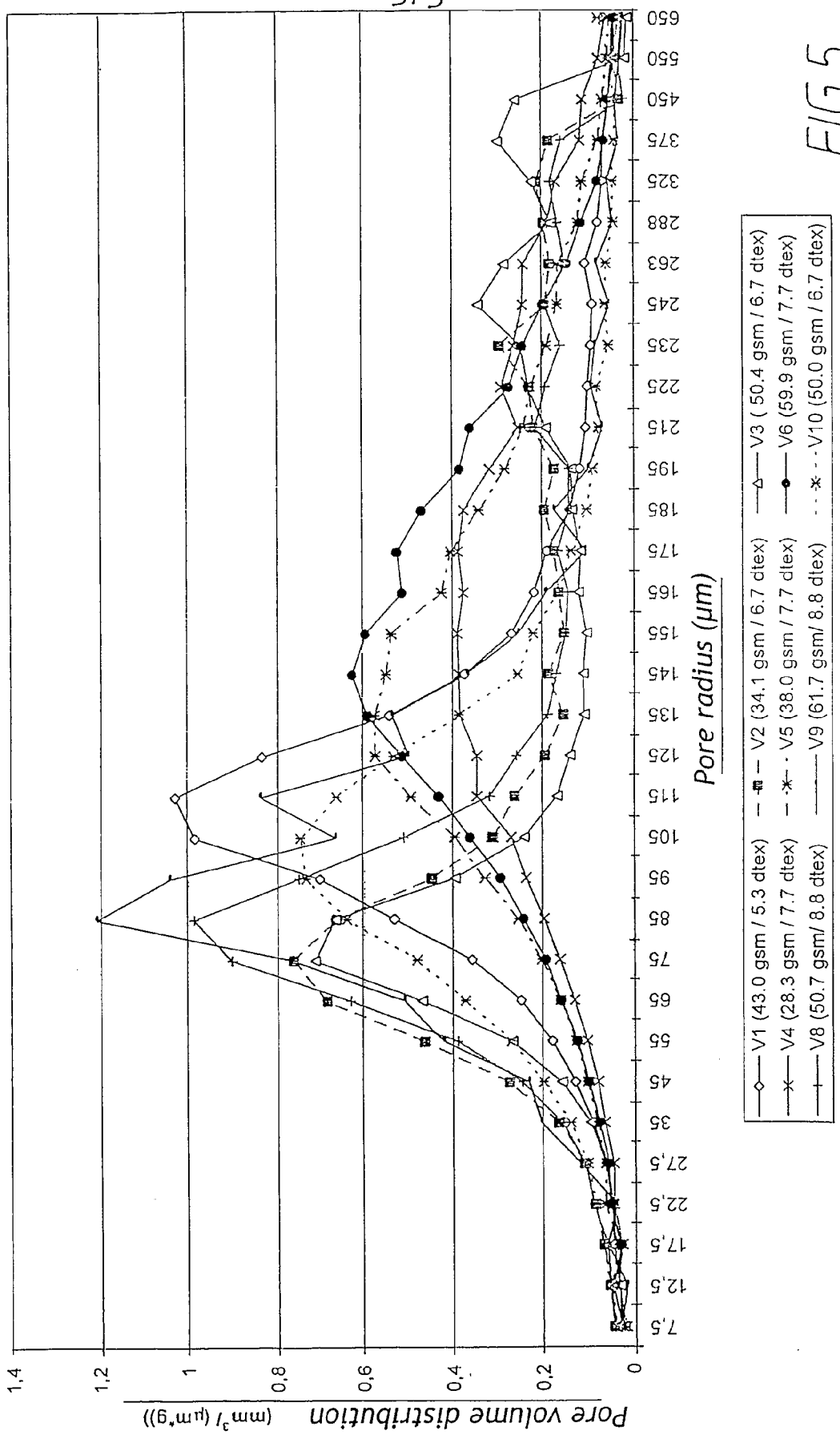

Pore volume distribution (mm³/(µm*g))
1,4
1,2
1
0,8
0,6
0,4
0,2
0
Pore radius (µm)
650
550
450
375
325
288
263
245
235
225
215
195
185
175
165
155
145
135
125
115
105
95
85
75
65
55
45
35
27,5
22,5
17,5
12,5
7,5
V1 (43.0 gsm / 5.3 dtex)
V2 (34.1 gsm / 6.7 dtex)
V3 (50.4 gsm / 6.7 dtex)
V4 (28.3 gsm / 7.7 dtex)
V5 (38.0 gsm / 7.7 dtex)
V6 (59.9 gsm / 7.7 dtex)
V8 (50.7 gsm/ 8.8 dtex)
V9 (61.7 gsm/ 8.8 dtex)
V10 (50.0 gsm / 6.7 dtex)

FIG.5

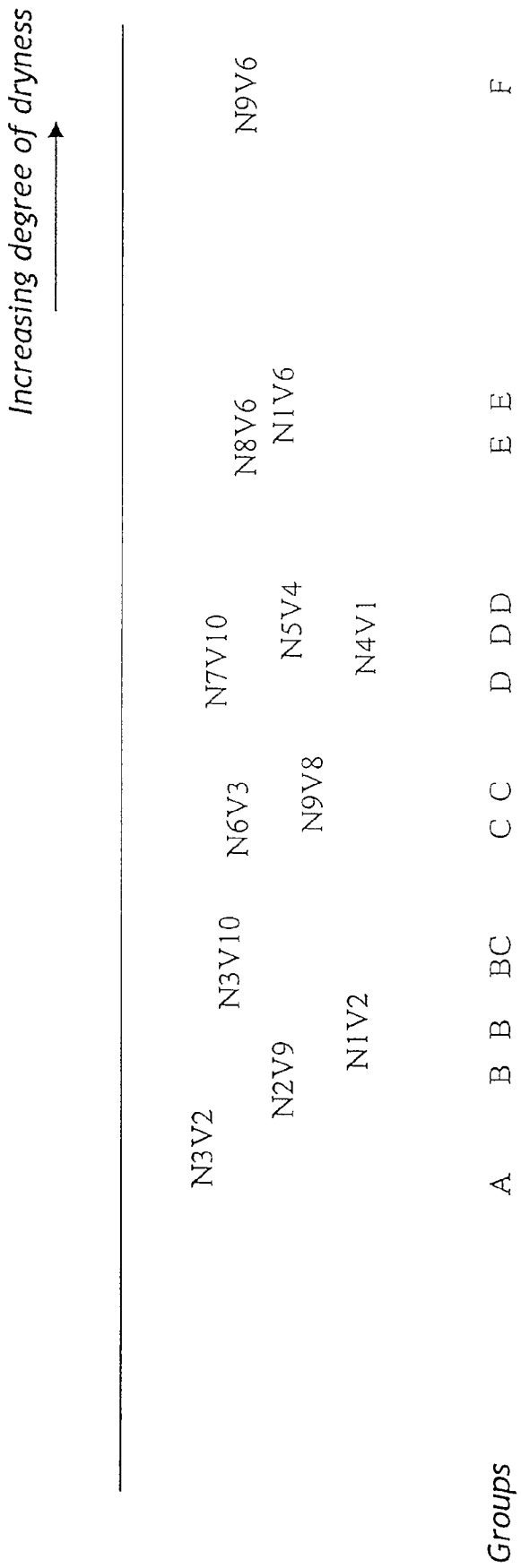

Increasing degree of dryness
Groups
A
B B BC
C C
D D D
E E
F
N3V2
N2V9
N3V10
N1V2
N6V3
N9V8
N7V10
N4V1
N5V4
N8V6
N1V6
N9V6

FIG.6

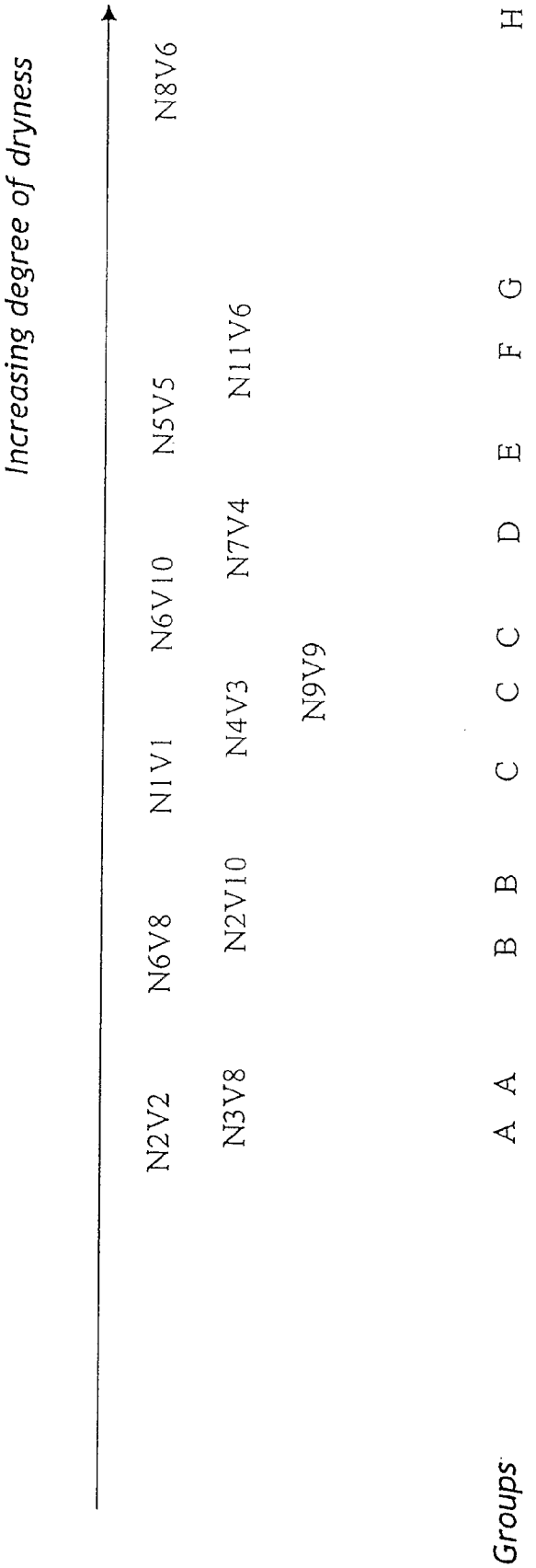

Increasing degree of dryness
N2V2
N6V8
N1V1
N6V10
N5V5
N8V6
N3V8
N2V10
N4V3
N7V4
N11V6
N9V9
Groups
A A
B B
C
C C
D
E
F
G
H

FIG.7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 2004/000364

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: A61F 13/15
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5728081 A (BAER ET AL), 17 March 1998 (17.03.1998), column 2, line 44 - line 45; column 2, line 55 - line 67; column 3, line 1 - line 5, abstract --	1-16
A	US 5968855 A (PERDELWITZ, JR ET AL), 19 October 1999 (19.10.1999), abstract --	1-16
A	WO 9851250 A1 (KIMBERLY-CLARK WORLDWIDE, INC), 19 November 1998 (19.11.1998), abstract --	1-16
A	EP 0312118 A2 (KIMBERLY-CLARK CORP), 19 April 1989 (19.04.1989), abstract --	1-16

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 May 2004	16 -06- 2004
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Ingrid Falk/EK Telephone No. +46 8 782 25 00

Form PCT/ISA/210 (second sheet) (January 2004)

US	5728081	A	17/03/1998	DE	19730181	A,C	22/01/1998
				FR	2751208	A,B	23/01/1998
				GB	2315224	A,B	28/01/1998
				GB	9714861	D	00/00/0000
US	5968855	A	19/10/1999	NONE			
WO	9851250	A1	19/11/1998	AU	740607	B	08/11/2001
				AU	7476998	A	08/12/1998
				BR	9809118	A	01/08/2000
				CA	2287882	A	19/11/1998
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				EG	21706	A	27/02/2002
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				ID	24083	A	00/00/0000
				IL	132128	D	00/00/0000
				JP	2001525700	T	11/12/2001
				PL	336667	A	03/07/2000
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				US	6172276	B	09/01/2001
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				ES	2085850	T	16/06/1996
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				HK	1006394	A	00/00/0000
				JP	2001266	A	05/01/1990
				JP	2818796	B	30/10/1998
				KR	9707413	B	08/05/1997
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				MX	162782	A	26/06/1991
				US	4798603	A	17/01/1989
				ZA	8807687	A	30/05/1990

Electronic Patent Application Fee Transmittal

Application Number:	16702920
Filing Date:	04-Dec-2019
Title of Invention:	Process for Making Fibrous Structures
First Named Inventor/Applicant Name:	Steven Lee Barnholtz
Filer:	Jerry Joseph Yetter
Attorney Docket Number:	10859CCC

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($)
Miscellaneous:				
RCE- 1ST REQUEST	1801	1	1360	1360
		Total in USD ($)		**1360**

Electronic Acknowledgement Receipt

EFS ID:	43003291
Application Number:	16702920
International Application Number:	
Confirmation Number:	3577
Title of Invention:	Process for Making Fibrous Structures
First Named Inventor/Applicant Name:	Steven Lee Barnholtz
Customer Number:	27752
Filer:	Jerry Joseph Yetter
Filer Authorized By:	
Attorney Docket Number:	10859CCC
Receipt Date:	16-JUN-2021
Filing Date:	04-DEC-2019
Time Stamp:	14:01:13
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1360
RAM confirmation Number	E20216FE01382905
Deposit Account	162480
Authorized User	Jerry Yetter

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)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment Submitted/Entered with Filing of CPA/RCE	10859CCCAmendment2.pdf	28283 3721ccc1407e12dad0430a3f4c358d8c12803866	no	4
Warnings:					
Information:					
2	Request for Continued Examination (RCE)	10859CCC_RCE_Transmittalcbc.pdf	1349951 05c349d45902f56236d7e307c610ebe7e14092f0	no	3
Warnings:					
Information:					
3	Transmittal Letter	10859CCC_IDS_Letter.pdf	17108 42ff3d07670bc3a67087ae4dfd7ceadbf95156d3	no	2
Warnings:					
Information:					
4	Information Disclosure Statement (IDS) Form (SB08)	10859CCC_IDSListofReferences_04_05_2021.pdf	71356 008263c3af5fa6ea75138394d0e9699f34511b08	no	5
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
5	Other Reference-Patent/App/Search documents	10859_ISR_WO.pdf	737460 6c3791ca44e86abd108cd60f847cae33647be2c3	no	17
Warnings:					
Information:					
6	Foreign Reference	WO2004098474A1.pdf	1085617 ddcdf75beb9a374129f44645d65b270035df6cca	no	29
Warnings:					

Information:					
7	Fee Worksheet (SB06)	fee-info.pdf	30507 78d477f9bc6937b5a0170b460be7fc75b854fd13	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	3320282	

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	16/702,920
Inventor(s)	:	Steven Lee Barnholtz, et al.
Filed	:	December 4, 2019
Art Unit	:	1742
Examiner	:	Leo B. Tentoni
Docket No.	:	10859CCC
Confirmation No.	:	3577
Customer No.	:	27752
Title	:	Process for Making Fibrous Structures

SUBMISSION OF REPLY WITH FILING OF RCE

This is in response to the Office Action of April 16, 2021, made Final. Please consider the following remarks and reconsider the application.

The Director is hereby authorized to charge all required fees (including any extension of time fees) and to credit any overpayments in this and any concurrent or future correspondence to Deposit Account No. 16-2480.

Remarks begin on page 2 of this paper.

REMARKS

Claim Status

Claims 1-24 are pending in the present application. No additional claims fee is believed to be due.

Rejections Under 35 USC 103

Claims 1-9, 13-15, 19 and 21-23 are rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Anderson, et al. (U.S. Patent 4,100,324 A) ("Anderson") in combination with Schwarz (U.S. Patent 5,476,616 A) ("Schwarz") and Pomplun, et al (U.S. Patent 5,948,710 A) ("Pomplun").

Applicants respectfully submit that Anderson in view of Schwarz and Pomplun fails to teach each and every element of Claim 1, the independent claim, because the teachings of Anderson in view of Schwarz and Pomplun cannot properly be combined to arrive at the claimed invention as claimed in Claim 1. Applicants respectfully submit that Anderson teaches the importance of its converging air flows that results in the breaking of its polymer streams into discontinuous microfibers. Anderson, Col. 2, lines 28-54. Applicants respectfully submit that Schwarz fails to recognize and/or teach and in fact teaches away from a die that utilizes converging air flows to break its polymer streams into discontinuous microfibers. Therefore, Applicants respectfully submit that the teachings of Anderson and Schwarz cannot properly be combined to substitute Schwarz's die for Anderson's die. Applicants further submit that Pomplun fails to overcome this deficiency. Accordingly, Applicants respectfully submit that Claim 1 is not rendered obvious over Anderson in view of Schwarz and Pomplun. MPEP 2143.03. Further, Applicants respectfully submit that Claims 2-9, 13-15, 19 and 21-23, which ultimately depend from Claim 1, are not rendered obvious over Anderson in view of Schwarz. MPEP 2143.03.

Claim 10 is rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Anderson in combination with Schwarz and Pomplun, all discussed above, and further in view of Haynes, et al (U.S. Patent Application Publication 2005/0133971 Al) ("Haynes").

Applicants respectfully submit that Claim 10, which ultimately depends from Claim 1, is not rendered obvious over Anderson in view of Schwarz and Pomplun and further in view of Haynes for the same reasons that Claim 1 is not rendered obvious over Anderson in view of Schwarz and Pomplun. MPEP 2143.03.

Claims 11 and 12 are rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Anderson in combination with Schwarz and Pomplun, all discussed above, and further in view of Trokhan, et al (U.S. Patent Application Publication 2003/0203196 Al) ("Trokhan").

Applicants respectfully submit that Claims 11 and 12, which ultimately depend from Claim 1, are not rendered obvious over Anderson in view of Schwarz and Pomplun, and further in view of Trokhan for the same reasons that Claim 1 is not rendered obvious over Anderson in view of Schwarz and Pomplun. MPEP 2143.03.

Claims 16-18 are rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Anderson in combination with Schwarz and Pomplun, all discussed above, and further in view of Stadelman, et al (U.S. Patent Application Publication 2005/0170729 Al) ("Stadelman").

Applicants respectfully submit that Claims 16-18 which ultimately depend from Claim 1, are not rendered obvious over Anderson in view of Schwarz and Pomplun and further in view of Stadelman for the same reasons that Claim 1 is not rendered obvious over Anderson in view of Schwarz and Pomplun. MPEP 2143.03.

Claim 20 is rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Anderson in combination with Schwarz and Pomplun, all discussed above, and further in view of Ouellette et al (U.S. Patent Application Publication 2007 /0202766 Al) ("Ouellette").

Applicants respectfully submit that Claim 20, which depends from Claim 1, is not rendered obvious over Anderson in view of Schwarz and Pomplun and further in view of Ouellette for the same reasons that Claim 1 is not rendered obvious over Anderson in view of Schwarz and Pomplun. MPEP 2143.03.

Claim 24 is rejected under pre-AIA 35 U.S.C. 103(a) as allegedly defining obvious subject matter over Anderson in combination with Schwarz and Pomplun, all discussed above.

Applicants respectfully submit that Anderson in view of Schwarz fails to teach each and every element of Claim 24, an independent claim, because Anderson in view of Schwarz and Pomplun cannot properly be combined to arrive at the claimed invention as claimed in Claim 24 as discussed above with respect to Claim 1. Accordingly, Applicants respectfully submit that Claim 24 is not rendered obvious over Anderson in view of Schwarz and Pomplun. MPEP 2143.03.

CONCLUSION

This response represents an earnest effort to place the present application in proper form and to distinguish the invention as claimed from the applied references. In view of the foregoing, the Applicant respectfully requests the Examiner to reconsider this application and allow the pending claims.

Respectfully submitted,
THE PROCTER & GAMBLE COMPANY

By /C. Brant Cook/

C. Brant Cook
Registration No. 39,151
(513) 884-4932

Date: June 16, 2021
Customer No. 27752

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	16/702,920	Filing Date	2019-12-04	Docket Number (if applicable)	10859CCC	Art Unit	1742
First Named Inventor	Steven Lee Barnholtz et al.			Examiner Name	LEO B. TENTONI		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☒ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 162480

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

X Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

Signature of Registered U.S. Patent Practitioner			
Signature	/C. Brant Cook/	Date (YYYY-MM-DD)	2021-06-16
Name	C. Brant Cook	Registration Number	39151

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

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

Privacy Act Statement

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

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether 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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	16/702,920
Inventor(s)	:	BARNHOLTZ Steven Lee et al.
Filed	:	December 04, 2019
Art Unit	:	1742
Examiner	:	Leo B. Tentoni
Docket No.	:	10859CCC
Confirmation No.	:	3577
Customer No.	:	27752
Title	:	PROCESS FOR MAKING FIBROUS STRUCTURES

INFORMATION DISCLOSURE STATEMENT

Pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98, it is respectfully requested that the document(s) cited in this submission be carefully considered by the Examiner and made of record in this case. As provided in §1.97(g), no representation is made or intended that a thorough art search was made. As provided in 37 C.F.R. §1.97(h), this Information Disclosure Statement does not constitute an admission of any kind, and specifically is not an admission that the document(s) cited in this submission is (are), or is (are) considered to be, material to the patentability of the above-identified patent application, as defined in 37 C.F.R. §1.56(b).

This Information Disclosure Statement is being submitted under 37 C.F.R. §1.97(b)(4) together with a Request For Continued Examination and/or before a first Office Action after filing a Request For Continued Examination (RCE) has been received. Therefore, no fee is believed to be due. However, in the event that this paper is crossing in the mail with a first Office Action, authorization is hereby given to charge the required fee pursuant to 37 C.F.R. §1.97(c) and 37 C.F.R. §1.17(p) to Deposit Account No. 16-2480 in the name of The Procter & Gamble Company.

Additional Items to be Noted by the Examiner

In accordance with 37 C.F.R. §1.98(a)(2), one or more foreign patent documents and/or non-patent literature is provided.

The International Search Report from the PCT/EPO is listed herein and a copy is provided.

Respectfully submitted,

THE PROCTER & GAMBLE COMPANY

By /C. Brant Cook/
C. Brant Cook
Registration No. 39,151
(513) -983-1004

Date: June 16, 2021
Customer No. 27752

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/702,920	12/04/2019	Steven Lee Barnholtz	10859CCC	3577

27752 7590 04/16/2021

THE PROCTER & GAMBLE COMPANY
GLOBAL IP SERVICES
CENTRAL BUILDING, C9
ONE PROCTER AND GAMBLE PLAZA
CINCINNATI, OH 45202

EXAMINER	
TENTONI, LEO B	

ART UNIT	PAPER NUMBER
1742	

NOTIFICATION DATE	DELIVERY MODE
04/16/2021	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):

centraldocket.im@pg.com
mayer.jk@pg.com
pair_pg@firsttofile.com

Office Action Summary	Application No. 16/702,920	Applicant(s) Barnholtz et al.	
	Examiner LEO B TENTONI	Art Unit 1742	AIA (FITF) Status No

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

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

Status

1)☑ Responsive to communication(s) filed on 08 April 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) 1-24 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) 1-24 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 is being examined under the pre-AIA first to invent provisions.

Terminal Disclaimer

2. The terminal disclaimer filed on 08 April 2021 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent 8,852,474 B2 and U.S. Patent 10,513,801 B2 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 103

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

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

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

5. Claims 1-9, 13-15, 19 and 21-23 is/are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson et al (U.S. Patent 4,100,324 A) in combination with Schwarz (U.S. Patent 5,476,616 A) and Pomplun et al (U.S. Patent 5,948,710 A).

Regarding claim 1, Anderson et al (see the entire document, in particular, col. 1, lines 13-17; col. 2, lines 38-60; col. 2, line 64 to col. 3, line 17; col. 6, lines 29-42 and 46-51; col. 7, lines 42-44 and 59-68) teaches a process of making a fibrous structure (see col. 1, lines 13-17 of Anderson et al; also referred to as a coform process), including the steps of (a) providing a die including one or more filament-forming holes (see col. 2, lines 38-54 of Anderson et al); (b) supplying at least a first polymer to the die (see col. 2, lines 38-40 of Anderson et al); (c) producing a plurality of filaments including the first polymer from the die (see col. 2, lines 40-45 of Anderson et al); (d) combining the filaments with solid additives to form a mixture (see col. 2, lines 55-60 of Anderson et al); and (e) collecting the mixture on a collection device to produce a fibrous structure (see col. 6, lines 29-42 of Anderson et al). Anderson et al does not explicitly teach (1) that the die includes three or more rows (of one or more filament-forming holes), or (2) the step of collecting the mixture on a belt. Schwarz (see the entire document, in particular, col. 1, lines 20-28; col. 2, lines 15-52; claim 5, lines 1-2; Figures 1, 2A and 2B) teaches a process of making a fibrous structure (see claim 5, lines 1-2 of Schwarz), wherein the die includes three or more rows (of one or more filament-forming holes) (see col. 2, lines 15-52; Figures 1, 2A and 2B of Schwarz), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a die including three or more rows (of one or more filament-forming holes) in the process of Anderson et al in view of Schwarz in order to increase the productivity of the process and provide a uniform gas stream (see col. 1, lines 20-28 of

Schwarz). Pomplun et al (see the entire document, in particular, the abstract; col. 12, lines 41-58; Figure 3) teaches a process of making a fibrous structure (see the abstract of Pomplun et al; also referred to as a coform process), including the step of collecting the mixture on a belt (see col. 12, lines 41-58 and Figure 3 of Pomplun et al), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to collect the mixture on a belt in the process of Anderson et al in view of Pomplun et al because the substitution of one known element (i.e., a belt, as taught by Pomplun et al) for another known element (i.e., a drum, as taught by Anderson et al) would have yielded predictable results (e.g., the collection of a mixture in a coform process) to one of ordinary skill in the art (see col. 12, lines 41-58 of Pomplun et al).

Regarding claims 2-5 and 19, see col. 2, lines 15-52; Figures 1, 2A and 2B of Schwarz.

Regarding claims 6-9, see col. 7, lines 59-68 of Anderson et al.

Regarding claims 13 and 14, see col. 2, lines 55-60 of Anderson et al.

Regarding claim 15, see col. 2, line 64 to col. 3, line 17 of Anderson et al.

Regarding claim 21, see col. 6, lines 46-61 of Anderson et al.

Regarding claim 22, see col. 7, lines 42-44 of Anderson et al.

Regarding claim 23, see col. 6, lines 38-42 of Anderson et al.

6. Claim 10 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson et al (U.S. Patent 4,100,324 A) in combination with Schwarz (U.S. Patent 5,476,616 A) and Pomplun et al (U.S. Patent 5,948,710 A) as applied to claims 1-9, 13-15, 19 and 21-23 above, and further in view of Haynes et al (U.S. Patent Application Publication 2005/0133971 A1).

Regarding claim 10, Anderson et al (in combination with Schwarz and Pomplun et al) does not explicitly teach (1) that the polymer is poly-lactic acids, polyhydroxyalkanoates, polycaprolactones, or mixtures thereof. Haynes et al (see the entire document, in particular, paragraphs [0003], [0035] and [0071]) teaches a process of making a fibrous structure (see paragraphs [0003] and [0035] of Haynes et al), wherein the polymer is poly-lactic acid (see paragraph [0071] of Haynes et al), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to include poly-lactic acid in the process of Anderson et al (in combination with Schwarz and Pomplun et al) in view of Haynes et al because the substitution of one known material (i.e., poly-lactic acid as taught by Haynes et al; note that Haynes et al also teaches poly-olefins) for another known material (i.e., poly-olefins, as taught by Anderson et al) would have yielded predictable results (e.g., the manufacture of a fibrous structure) to one of ordinary skill in the art.

7. Claims 11 and 12 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson et al (U.S. Patent 4,100,324 A) in combination with Schwarz (U.S. Patent 5,476,616 A) and Pomplun et al (U.S. Patent 5,948,710 A) as applied to claims 1-9, 13-15, 19 and 21-23 above, and further in view of Trokhan et al (U.S. Patent Application Publication 2003/0203196 A1).

Regarding claim 11, Anderson et al (in combination with Schwarz and Pomplun et al) does not explicitly teach (1) that the polymer includes a natural polymer. Trokhan et al (see the entire document, in particular, paragraphs [0007], [0008], [0123], [0127], [0130] and [0152]) teaches a process of making a fibrous structure (see paragraph [0008] of Trokhan et al), wherein the polymer is a natural polymer (see paragraphs [0123], [0127], [0130] and [0152] of

Trokhan et al; starch), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a natural polymer in the process of Anderson et al (in combination with Schwarz and Pomplun et al) in view of Trokhan et al because the substitution of one known material (i.e., starch, as taught by Trokhan et al) for another known material (i.e., poly-olefins, as taught by Anderson et al) would have yielded predictable results (e.g., the manufacture of a fibrous structure) to one of ordinary skill in the art.

Regarding claim 12, see paragraphs [0123], [0127], [0130] and [0152] of Trokhan et al.

8. Claims 16-18 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson et al (U.S. Patent 4,100,324 A) in combination with Schwarz (U.S. Patent 5,476,616 A) and Pomplun et al (U.S. Patent 5,948,710 A) as applied to claims 1-9, 13-15, 19 and 21-23 above, and further in view of Stadelman et al (U.S. Patent Application Publication 2005/0170729 A1).

Regarding claim 16, Anderson et al (in combination with Schwarz and Pomplun et al) does not explicitly teach (1) the step of contacting a surface of the fibrous structure with a plurality of filaments including a second polymer. Stadelman et al (see the entire document, in particular, paragraphs [0011] and [0012]) teaches a process of making a fibrous structure (see paragraph [0012] of Stadelman et al), including the step of contacting a surface of the fibrous structure with a plurality of filaments including a second polymer (see paragraph [0011] of Stadelman et al), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to contact a surface of the fibrous structure with a plurality of filaments including a second polymer in the process of Anderson et al (in combination with Schwarz and Pomplun et al) in view of Stadelman et al in order to manufacture a fibrous

structure having acceptable elastic and storage capabilities (see paragraph [0011] of Stadelman et al).

Regarding claims 17 and 18, see paragraph [0012] of Stadelman et al.

9. Claim 20 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson et al (U.S. Patent 4,100,324 A) in combination with Schwarz (U.S. Patent 5,476,616 A) and Pomplun et al (U.S. Patent 5,948,710 A) as applied to claims 1-9, 13-15, 19 and 21-23 above, and further in view of Ouellette et al (U.S. Patent Application Publication 2007/0202766 A1).

Regarding claim 20, Anderson et al (in combination with Schwarz and Pomplun et al) does not explicitly teach (1) making a fibrous structure having a pore volume distribution such that greater than about 40% of the total pore volume present in the fibrous structure exists in pores of radii of from about 121 μm to about 200 μm. Ouellette et al (see the entire document, in particular, paragraphs [0016], [0019] and [0088]; Figures 4-6) teaches a process of making a fibrous structure (see paragraph [0019] of Ouellette et al), including making a fibrous structure having a pore volume distribution such that greater than about 40% of the total pore volume present in the fibrous structure exists in pores of radii of from about 121 μm to about 200 μm (see paragraph [0088] and Figures 4-6 of Ouellette et al), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to make a fibrous structure having a pore volume distribution such that greater than about 40% of the total pore volume present in the fibrous structure exists in pores of radii of from about 121 μm to about 200 μm in the process of Anderson et al (in combination with Schwarz and Pomplun et al) in view of

Ouellette et al in order to manufacture a fibrous structure having a desired pore distribution (see paragraph [0016] of Ouellette et al).

10. Claim 24 is/are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson et al (U.S. Patent 4,100,324 A) in combination with Schwarz (U.S. Patent 5,476,616 A) and Pomplun et al (U.S. Patent 5,948,710 A).

Regarding claim 24, Anderson et al (see the entire document, in particular, col. 1, lines 13-17; col. 2, lines 38-60; col. 2, line 64 to col. 3, line 17; col. 6, lines 29-42 and 46-51; col. 7, lines 42-44 and 59-68) teaches a process of making a fibrous structure (see col. 1, lines 13-17 of Anderson et al; also referred to as a coform process), including the steps of (a) providing a die including one or more filament-forming holes (see col. 2, lines 38-54 of Anderson et al); (b) supplying a poly-olefin polymer to the die (see col. 2, lines 38-40 and col. 7, lines 59-68 of Anderson et al); (c) producing a plurality of filaments including the poly-olefin polymer from the die (see col. 2, lines 40-45 of Anderson et al); (d) combining the filaments with wood pulp fibers to form a mixture (see col. 2, lines 55-60 of Anderson et al); and (e) collecting the mixture on a collection device to produce a fibrous structure (see col. 6, lines 29-42 of Anderson et al). Anderson et al does not explicitly teach (1) that the die includes three or more rows (of one or more filament-forming holes), or (2) the step of collecting the mixture on a belt. Schwarz (see the entire document, in particular, col. 1, lines 20-28; col. 2, lines 15-52; claim 5, lines 1-2; Figures 1, 2A and 2B) teaches a process of making a fibrous structure (see claim 5, lines 1-2 of Schwarz), wherein the die includes three or more rows (of one or more filament-forming holes) (see col. 2, lines 15-52; Figures 1, 2A and 2B of Schwarz), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a die including three or

more rows (of one or more filament-forming holes) in the process of Anderson et al in view of Schwarz in order to increase the productivity of the process and provide a uniform gas stream (see col. 1, lines 20-28 of Schwarz). Pomplun et al (see the entire document, in particular, the abstract; col. 12, lines 41-58; Figure 3) teaches a process of making a fibrous structure (see the abstract of Pomplun et al; also referred to as a coform process), including the step of collecting the mixture on a belt (see col. 12, lines 41-58 and Figure 3 of Pomplun et al), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to collect the mixture on a belt in the process of Anderson et al in view of Pomplun et al because the substitution of one known element (i.e., a belt, as taught by Pomplun et al) for another known element (i.e., a drum, as taught by Anderson et al) would have yielded predictable results (e.g., the collection of a mixture in a coform process) to one of ordinary skill in the art (see col. 12, lines 41-58 of Pomplun et al).

Response to Arguments

11. Applicant's arguments with respect to claim(s) 1-24 have been considered but are moot because the new ground of rejection does not rely on any reference applied in the prior rejection of record for any teaching or matter specifically challenged in the argument.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). 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 date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEO B. TENTONI whose telephone number is (571)272-1209. The examiner can normally be reached on 7:30-4:00 ET M-F.

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, Christina A. Johnson can be reached on (571)272-1176. 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.

LEO B. TENTONI
Primary Examiner
Art Unit 1742

/LEO B TENTONI/
Primary Examiner, Art Unit 1742

Notice of References Cited	Application/Control No. 16/702,920	Applicant(s)/Patent Under Reexamination Barnholtz et al.	
	Examiner LEO B TENTONI	Art Unit 1742	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-5948710-A	09-1999	Pomplun; William Seal	D04H5/06	442/341
	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.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/702,920	Barnholtz et al.
	Examiner	Art Unit
	LEO B TENTONI	1742

CPC - Searched*		
Symbol	**Date**	**Examiner**
B32B 37/20, 37/203	01/04/2021	LBT
D01D 5/08, 5/0985, 7/00, 10/02	01/04/2021	LBT
D01F 6/04, 6/06, 6/14, 6/60, 6/62, 6/625	01/04/2021	LBT
D04H 1/26, 1/4291, 1/4309, 1/4334, 1/435, 1/56, 3/007, 3/009, 3/011, 3/015, 3/16, 5/06	01/04/2021	LBT
D10B 2201/22, 2321/02, 2321/022, 2321/06, 2331/02, 2331/04, 2331/041	01/04/2021	LBT
ABOVE UPDATED	04/13/2021	LBT

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**
264	131, 171.1, 211.12, 555	01/04/2021	LBT
156	167, 244.11, 324	01/04/2021	LBT

* 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**
CHECKED PARENT AND PROVISIONAL APPLICATIONS	01/04/2021	LBT
INVENTOR NAME SEARCH	01/04/2021	LBT

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/702,920	Barnholtz et al.
	Examiner	Art Unit
	LEO B TENTONI	1742

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

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/702,920	Filing Date 12/04/2019	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $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	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	04/08/2021	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 24	Minus	** 24	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 2	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

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $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.	SLIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/SHARONE R MOORE/
*** 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.

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 OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT**
Application Number	16702920
Filing Date	04-Dec-2019
First Named Inventor	Steven Barnholtz
Attorney Docket Number	10859CCC
Title of Invention	Process for Making Fibrous Structures

☒ 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
The Procter & Gamble Company	100%

The owner(s) with percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s)

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

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:
- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

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

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 39151

- ( ) 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	/C. Brant Cook/
Name	C. Brant Cook

*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:	16702920
Filing Date:	04-Dec-2019
Title of Invention:	Process for Making Fibrous Structures
First Named Inventor/Applicant Name:	Steven Lee Barnholtz
Filer:	Christopher Brant Cook/Mary Bryan
Attorney Docket Number:	10859CCC

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**

Doc Code: DISQ.E.FILE
Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 16702920

Filing Date: 04-Dec-2019

Applicant/Patent under Reexamination: Barnholtz

Electronic Terminal Disclaimer filed on April 8, 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:	42403824
Application Number:	16702920
International Application Number:	
Confirmation Number:	3577
Title of Invention:	Process for Making Fibrous Structures
First Named Inventor/Applicant Name:	Steven Lee Barnholtz
Customer Number:	27752
Filer:	Christopher Brant Cook/Mary Bryan
Filer Authorized By:	Christopher Brant Cook
Attorney Docket Number:	10859CCC
Receipt Date:	08-APR-2021
Filing Date:	04-DEC-2019
Time Stamp:	15:25:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$170
RAM confirmation Number	E202148F24571591
Deposit Account	162480
Authorized User	Mary Bryan

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)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Terminal Disclaimer-Filed (Electronic)	eTerminal-Disclaimer.pdf	33574 8ade8495cddd257f559b1a2589e5aaf6d7c8857f	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30497 60987d691ebf06755b516b0802948ab1d2eb92d2	no	2
Warnings:					
Information:					
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New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

Electronic Acknowledgement Receipt

EFS ID:	42403686
Application Number:	16702920
International Application Number:	
Confirmation Number:	3577
Title of Invention:	Process for Making Fibrous Structures
First Named Inventor/Applicant Name:	Steven Lee Barnholtz
Customer Number:	27752
Filer:	Christopher Brant Cook/Mary Bryan
Filer Authorized By:	Christopher Brant Cook
Attorney Docket Number:	10859CCC
Receipt Date:	08-APR-2021
Filing Date:	04-DEC-2019
Time Stamp:	15:19:41
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	Applicant Arguments/Remarks Made in an Amendment	10859CCCAmendment.pdf	46885 1f274de020b384fdc21efd71f3d51ac81baf8b56	no	9

Warnings:

Information:	
Total Files Size (in bytes):	46885

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New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	16/702,920
Inventor(s)	:	Steven Lee Barnholtz, et al.
Filed	:	December 4, 2019
Art Unit	:	1742
Examiner	:	Leo B. Tentoni
Docket No.	:	10859CCC
Confirmation No.	:	3577
Customer No.	:	27752
Title	:	Process for Making Fibrous Structures

AMENDMENT

This is in response to the Office Action of January 8, 2021. Please amend the above-identified application as follows, consider the following remarks and reconsider the application.

The Director is hereby authorized to charge all required fees (including any extension of time fees) and to credit any overpayments in this and any concurrent or future correspondence to Deposit Account No. 16-2480.

Amendments to the Specification begin 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.

AMENDMENTS TO THE SPECIFICATION

Please amend the specification as follows:

Please replace the paragraph beginning at page 1, line 5 with the following amended paragraph:

This application is a continuation of prior U.S. Application No. 15,891,726 filed February 8, 2018; which is a continuation of U.S. Application No. 14/475,699 filed September 5, 2014, now U.S. Patent No. 9,926,648; which is a continuation of U.S. Application No. 12,170,575 filed July 10, 2008, now U.S. Patent No. 8,852,474; which claims the benefit of U.S. Provisional Application No. 60/959,885, filed July 17, 2007.

~~This application claims the benefit of U.S. Provisional Application No. 60/959,885, filed July 17, 2007.~~

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AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions and listings of the claims in the application.

1. (Currently Amended) A process for making a fibrous structure, the process comprising the steps of:

a. providing a die comprising three or more rows of one or more filament-forming holes;

b. supplying at least a first polymer to the die;

c. producing a plurality of filaments comprising the first polymer from the die;

d. combining the filaments with solid additives to form a mixture; and

e. collecting the mixture on a belt~~collection device~~ to produce a fibrous structure.

2. (Original) The process according to Claim 1 wherein at least one row of the one or more filament-forming holes comprises two or more filament-forming holes.

3. (Original) The process according to Claim 1 wherein one or more fluid-releasing holes are associated with a filament-forming hole.

4. (Original) The process according to Claim 3 wherein more than one fluid-releasing holes is associated with a filament-forming hole.

5. (Original) The process according to Claim 3 wherein at least one of the one or more fluid-releasing holes is concentrically positioned around one filament-forming hole.

6. (Original) The process according to Claim 1 wherein the first polymer comprises a synthetic polymer.

7. (Original) The process according to Claim 6 wherein the synthetic polymer is selected from the group consisting of: polyvinyl alcohol, polyvinyl alcohol derivatives,

polyesters, nylons, polyolefins, polylactic acids, polyhydroxyalkanoates, polycaprolactones and mixtures thereof.

8. (Original) The process according to Claim 7 wherein the synthetic polymer comprises a polyolefin.

9. (Original) The process according to Claim 8 wherein the polyolefin comprises polypropylene.

10. (Original) The process according to Claim 7 wherein the synthetic polymer is selected from the group consisting of: polylactic acids, polyhydroxyalkanoates, polycaprolactones and mixtures thereof.

11. (Original) The process according to Claim 1 wherein the first polymer comprises a natural polymer.

12. (Original) The process according to Claim 11 wherein the natural polymer is selected from the group consisting of: starch, starch derivatives, cellulose, cellulose derivatives, hemicellulose, hemicellulose derivatives and mixtures thereof.

13. (Original) The process according to Claim 1 wherein the solid additives comprise fibers.

14. (Original) The process according to Claim 13 wherein the fibers comprise wood pulp fibers.

15. (Original) The process according to Claim 1 wherein the solid additives are combined with the plurality of filaments by a solid additive spreader.

16. (Original) The process according to Claim 1 wherein the process further comprises the step of:

f. contacting a surface of the fibrous structure with a plurality of filaments comprising a second polymer.

17. (Original) The process according to Claim 16 wherein the plurality of filaments comprising the second polymer are in the form of a second fibrous structure.

18. (Original) The process according to Claim 16 wherein the second polymer is the same as the first polymer.

19. (Currently Amended) The process according to Claim 3~~1~~ wherein a~~the~~ fluid released by the fluid-releasing holes comprises air.

20. (Original) The process according to Claim 1 wherein the fibrous structure exhibits a pore volume distribution such that greater than about 40% of the total pore volume present in the fibrous structure exists in pores of radii of from about 121μm to about 200μm.

21. (Original) The process according to Claim 1 wherein the process further comprises the step of subjecting the fibrous structure to a thermal bonding operation.

22. (Original) The process according to Claim 1 wherein the process is directly coupled to a post-processing operation.

23. (Original) The process according to Claim 1 wherein the process is closely coupled to a post-processing operation.

24. (Currently Amended) A process for making a fibrous structure, the process comprising the steps of:

a. providing a die comprising three or more rows of one or more filament-forming holes;

b. supplying a polyolefin polymer to the die;

c. producing a plurality of filaments comprising the polyolefin polymer from the die;

d. combining the filaments with wood pulp fibers to form a mixture; and

e. collecting the mixture on a belt~~collection device~~ to produce a fibrous structure.

REMARKS

Claim Status

Claims 1 and 24 have been amended to define the claimed invention with greater specificity by reciting that the mixture is collected on a belt. Support for this amendment is found in the Specification, for example at Page 17, lines 10-11 and in the Drawings, for example Fig. 10 as originally filed.

Claim 19 has been amended to depend from and be consistent with Claim 3.

Claims 1-24 are pending in the present application. No additional claims fee is believed to be due.

Applicants submit that these changes do not involve any introduction of new matter. Consequently, entry of these changes is believed to be in order and is respectfully requested.

Rejection Under 35 USC 112

Claim 19 is rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor (or for applications subject to pre-AIA 35 U.S.C. 112, the Applicant), regards as the invention.

Applicants respectfully submit that Claim 19, as amended, is definite.

Rejections Under 35 USC 103

Claims 1-9, 13-15, 19 and 21-23 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson et al. (U.S. Patent 4,100,324 A) ("Anderson") in combination with Schwarz (U.S. Patent 5,476,616 A) ("Schwarz").

Applicants respectfully submit that Anderson in view of Schwarz fails to teach each and every element of Claim 1, the independent claim, as amended, because Anderson in view of Schwarz fails to teach, at a minimum, using a belt as a collection device as claimed. Applicants respectfully submit that Claim 1, as amended, is not rendered obvious over Anderson in view of Schwarz. MPEP 2143.03. Further, Applicants respectfully submit that Claims 2-9, 13-15, 19 and 21-23, as amended, which ultimately depend from Claim 1, as amended, are not rendered obvious over Anderson in view of Schwarz. MPEP 2143.03.

Claim 10 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson in combination with Schwarz, both discussed above, and further in view of Haynes, et al. (U.S. Patent Application Publication 2005/0133971 A1) ("Haynes").

Applicants respectfully submit that Claim 10, which ultimately depends from Claim 1, as amended, is not rendered obvious over Anderson in view of Schwarz and further in view of Haynes for the same reasons that Claim 1, as amended, is not rendered obvious over Anderson in view of Schwarz. MPEP 2143.03.

Claims 11 and 12 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson in combination with Schwarz, both discussed above, and further in view of Trokhan, et al. (U.S. Patent Application Publication 2003/0203196 Al) ("Trokhan").

Applicants respectfully submit that Claims 11 and 12, which ultimately depend from Claim 1, as amended, are not rendered obvious over Anderson in view of Schwarz and further in view of Trokhan for the same reasons that Claim 1, as amended, is not rendered obvious over Anderson in view of Schwarz. MPEP 2143.03.

Claims 16-18 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson in combination with Schwarz, both discussed above, and further in view of Stadelman, et al. (U.S. Patent Application Publication 2005/0170729 A1) ("Stadelman").

Applicants respectfully submit that Claims 16-18 which ultimately depend from Claim 1, as amended, are not rendered obvious over Anderson in view of Schwarz and further in view of Stadelman for the same reasons that Claim 1, as amended, is not rendered obvious over Anderson in view of Schwarz. MPEP 2143.03.

Claim 20 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson in combination with Schwarz, both discussed above, and further in view of Ouellette, et al. (U.S. Patent Application Publication 2007 /0202766 Al) ("Ouellette").

Applicants respectfully submit that Claim 20, which depends from Claim 1, as amended, is not rendered obvious over Anderson in view of Schwarz and further in view of Ouellette for the same reasons that Claim 1, as amended, is not rendered obvious over Anderson in view of Schwarz. MPEP 2143.03.

Claim 24 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson in combination with Schwarz, both discussed above.

Applicants respectfully submit that Anderson in view of Schwarz fails to teach each and every element of Claim 24, an independent claim, as amended, because Anderson in view of Schwarz fails to teach, at a minimum, using a belt as a collection device as claimed. Applicants respectfully submit that Claim 24, as amended, is not rendered obvious over Anderson in view of Schwarz. MPEP 2143.03.

Double Patenting

Claims 1-24 are rejected on the ground of nonstatutory double patenting as being unpatentable over Claims 1-18 of U.S. Patent No. 8,852,474 B2.

Applicants respectfully submit herewith an eTerminal Disclaimer that overcomes this rejection.

Claims 1-24 are rejected on the ground of nonstatutory double patenting as being unpatentable over Claims l-25 of U.S. Patent No. 10,513,801 B2.

Applicants respectfully submit herewith an eTerminal Disclaimer that overcomes this rejection.

CONCLUSION

This response represents an earnest effort to place the present application in proper form and to distinguish the invention as claimed from the applied references. In view of the foregoing, the Applicant respectfully requests the Examiner to enter the amendments presented herein, reconsider this application, and allow the pending claims.

Respectfully submitted,

THE PROCTER & GAMBLE COMPANY

By /C. Brant Cook/

C. Brant Cook
Registration No. 39,151
(513) 983-1004

Date: April 8, 2021
Customer No. 27752

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/702,920	12/04/2019	Steven Lee Barnholtz	10859CCC	3577

27752 7590 01/08/2021

THE PROCTER & GAMBLE COMPANY
GLOBAL IP SERVICES
CENTRAL BUILDING, C9
ONE PROCTER AND GAMBLE PLAZA
CINCINNATI, OH 45202

EXAMINER	
TENTONI, LEO B	

ART UNIT	PAPER NUMBER
1742	

NOTIFICATION DATE	DELIVERY MODE
01/08/2021	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):

centraldocket.im@pg.com
mayer.jk@pg.com
pair_pg@firsttofile.com

Office Action Summary	Application No. 16/702,920	Applicant(s) Barnholtz et al.	
	Examiner LEO B TENTONI	Art Unit 1742	AIA (FITF) Status No

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

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

Status

1)☑ Responsive to communication(s) filed on 03 March 2020.

☐ 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) 1-24 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) 1-24 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 04 December 2019 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 03032020;03032020.

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 is being examined under the pre-AIA first to invent provisions.

Specification

2. The disclosure is objected to because of the following informalities: On page 1, all of the information of the parent applications should be included (including application number, filing date and patent number).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of 35 U.S.C. 112(b):

> (b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 19 is rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor (or for applications subject to pre-AIA 35 U.S.C. 112, the applicant), regards as the invention.

5. Claim 19 recites the limitation "the fluid-releasing holes" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

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

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

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

8. Claims 1-9, 13-15, 19 and 21-23 is/are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson et al (U.S. Patent 4,100,324 A) in combination with Schwarz (U.S. Patent 5,476,616 A).

Regarding claim 1, Anderson et al (see the entire document, in particular, col. 1, lines 13-17; col. 2, lines 33-60; col. 2, line 64 to col. 3, line 17; col. 6, lines 29-42 and 46-51; col. 7, lines 42-44 and 59-68) teaches a process of making a fibrous structure (see col. 1, lines 13-17 of Anderson et al), including the steps of (a) providing a die including one or more filament-forming holes (see col. 2, lines 38-54 of Anderson et al); (b) supplying at least a first polymer to the die (see col. 2, lines 38-40 of Anderson et al); (c) producing a plurality of filaments including

the first polymer from the die (see col. 2, lines 40-45 of Anderson et al); (d) combining the filaments with solid additives to form a mixture (see col. 2, lines 55-60 of Anderson et al); and (e) collecting the mixture on a collection device to produce the fibrous structure (see col. 6, lines 29-42 of Anderson et al). Anderson et al does not explicitly teach (1) that the die includes three or more rows (of one or more filament-forming holes). Schwarz (see the entire document, in particular, col. 1, lines 20-28; col. 2, lines 15-52; claim 5, lines 1-2; Figures 1, 2A and 2B) teaches a process of making a fibrous structure (see claim 5, lines 1-2 of Schwarz), wherein the die includes three or more rows (see col. 2, lines 15-52; Figures 1, 2A and 2B of Schwarz), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a die including three or more rows in the process of Anderson et al in view of Schwarz in order to increase the productivity of the process and provide a uniform gas stream (see col. 1, lines 20-28 of Schwarz).

Regarding claims 2-5 and 19, see col. 2, lines 15-52; Figures 1, 2A and 2B of Schwarz.

Regarding claims 6-9, see col. 7, lines 59-68 of Anderson et al.

Regarding claims 13 and 14, see col. 2, lines 55-60 of Anderson et al.

Regarding claim 15, see col. 2, line 64 to col. 3, line 17 of Anderson et al.

Regarding claim 21, see col. 6, lines 46-51 of Anderson et al.

Regarding claim 22, see col. 7, lines 42-44 of Anderson et al.

Regarding claim 23, see col. 6, lines 38-42 of Anderson et al.

9. Claim 10 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson et al (U.S. Patent 4,100,324 A) in combination with Schwarz (U.S. Patent 5,476,616 A)

as applied to claims 1-9, 13-15, 19 and 21-23 above, and further in view of Haynes et al (U.S. Patent Application Publication 2005/0133971 A1).

Regarding claim 10, Anderson et al (in combination with Schwarz) does not explicitly teach (1) that the polymer is poly-lactic acids, polyhydroxyalkanoates, polycaprolactones and mixtures thereof. Haynes et al (see the entire document, in particular, paragraphs [0003], [0035] and [0071]) teaches a process of making a fibrous structure (see paragraphs [0003] and [0035] of Haynes et al), wherein the polymer is poly-lactic acid (see paragraph [0071] of Haynes et al), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide poly-lactic acid in the process of Anderson et al (in combination with Schwarz) in view of Haynes et al in order to manufacture a fibrous structure from poly-lactic acid (see paragraph [0071] of Haynes et al). Furthermore, the substitution of one known material (i.e., poly-lactic acid, as taught by Haynes et al; note that Haynes et al also teaches poly-olefins) for another known material (i.e., poly-olefins, as taught by Anderson et al) would have yielded predictable results (e.g., the manufacture of a fibrous structure) to one of ordinary skill in the art.

10. Claims 11 and 12 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson et al (U.S. Patent 4,100,324 A) in combination with Schwarz (U.S. Patent 5,476,616 A) as applied to claim s 1-9, 13-15, 19 and 21-23 above, and further in view of Trokhan et al (U.S. Patent Application Publication 2003/0203196 A1).

Regarding claim 11, Anderson et al (in combination with Schwarz) does not explicitly teach (1) that the polymer includes a natural polymer. Trokhan et al (see the entire document, in particular, paragraphs [0007], [0008], [0123], [0127], [0130] and [0152]) teaches a process of

making a fibrous structure (see paragraph [0008] of Trokhan et al), wherein the polymer is a natural polymer (see paragraphs [0123], [0127], [0130] and [0152] of Trokhan et al; starch), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a natural polymer in the process of Anderson et al (in combination with Schwarz) in view of Trokhan et al in order to manufacture a flexible fibrous structure (see paragraph [0007] of Trokhan et al). Furthermore, the substitution of one known material (i.e., starch, as taught by Trokhan et al) for another known material (i.e., poly-olefins, as taught by Anderson et al) would have yielded predictable results (e.g., the manufacture of a fibrous structure) to one of ordinary skill in the art.

Regarding claim 12, see paragraphs [0123], [0127], [0130] and [0152] of Trokhan et al (starch).

11. Claims 16-18 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson et al (U.S. Patent 4,100,324 A) in combination with Schwarz (U.S. Patent 5,476,616 A) as applied to claims 1-9, 13-15, 19 and 21-23 above, and further in view of Stadelman et al (U.S. Patent Application Publication 2005/0170729 A1).

Regarding claim 16, Anderson et al (in combination with Schwarz) does not explicitly teach (1) the step of contacting a surface of a fibrous structure with a plurality of filaments including a second polymer. Stadelman et al (see the entire document, in particular, paragraphs [0011] and [0012]) teaches a process of making a fibrous structure (see paragraph [0012] of Stadelman et al), including the step of contacting a surface of a fibrous structure with a plurality of filaments including a second polymer (see paragraph [0012] of Stadelman et al), and it would have been obvious to one of ordinary skill in the art before the time the invention was made to

contact a surface of a fibrous structure with a plurality of filaments including a second polymer in the process of Anderson et al (in combination with Schwarz) in view of Stadelman et al in order to manufacture a fibrous structure having acceptable elastic and storage capabilities (see paragraph [0011] of Stadelman et al).

Regarding claims 17 and 18, see paragraph [0012] of Stadelman et al.

12. Claim 20 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson et al (U.S. Patent 4,100,324 A) in combination with Schwarz (U.S. Patent 5,476,616 A) as applied to claims 1-9, 13-15, 19 and 21-23 above, and further in view of Ouellette et al (U.S. Patent Application Publication 2007/0202766 A1).

Regarding claim 20, Anderson et al (in combination with Schwarz) does not explicitly teach (1) making a fibrous structure having a pore volume distribution such that greater than about 40% of the total pore volume in the fibrous structure exists in pores of radii of from about 121 μm to about 200 μm. Ouellette et al (see the entire document, in particular, paragraphs [0016], [0019] and [0088]; Figures 4-6) teaches a process of making a fibrous structure (see paragraph [0019] of Ouellette et al), including making a fibrous structure having a pore volume distribution such that greater than about 40% of the total pore volume in the fibrous structure exists in pores of radii of from about 121 μm to about 200 μm (see paragraph [0088]; Figures 4-6 of Ouellette et al), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to make a fibrous structure having a pore volume distribution such that greater than about 40% of the total pore volume in the fibrous structure exists in pores of radii of from about 121 μm to about 200 μm in the process of Anderson et al

(in combination with Schwarz) in view of Ouellette et al in order to manufacture a fibrous structure with a desired pore distribution (see paragraph [0016] of Ouellette et al).

13. Claim 24 is/are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Anderson et al (U.S. Patent 4,100,324 A) in combination with Schwarz (U.S. Patent 5,476,616 A).

Regarding claim 24, Anderson et al (see the entire document, in particular, col. 1, lines 13-17; col. 2, lines 33-60; col. 2, line 64 to col. 3, line 17; col. 6, lines 29-42 and 46-51; col. 7, lines 42-44 and 59-68) teaches a process of making a fibrous structure (see col. 1, lines 13-17 of Anderson et al), including the steps of (a) providing a die including one or more filament-forming holes (see col. 2, lines 38-54 of Anderson et al); (b) supplying a poly-olefin polymer to the die (see col. 2, lines 38-40 and col. 7, lines 59-68 of Anderson et al); (c) producing a plurality of filaments including the poly-olefin polymer from the die (see col. 2, lines 40-45 of Anderson et al); (d) combining the filaments with wood pulp fibers to form a mixture (see col. 2, lines 55-60 of Anderson et al); and (e) collecting the mixture on a collection device to produce a fibrous structure (see col. 6, lines 29-42 of Anderson et al). Anderson et al does not explicitly teach (1) that the die includes three or more rows (of one or more filament-forming holes). Schwarz (see the entire document, in particular, col. 1, lines 20-28; col. 2, lines 15-52; claim 5, lines 1-2; Figures 1, 2A and 2B) teaches a process of making a fibrous structure (see claim 5, lines 1-2 of Schwarz), wherein the die includes three or more rows (see col. 2, lines 15-52; Figures 1, 2A and 2B of Schwarz), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a die including three or more rows in the process of Anderson et al in view of Schwarz in order to increase the productivity of the process and provide a uniform gas stream (see col. 1, lines 20-28 of Schwarz).

Double Patenting

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the 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.

15. Claims 1-24 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-18 of U.S. Patent No. 8,852,474 B2. Although the claims at issue are not identical, they are not patentably distinct from each other because the elimination of an element (i.e., the elimination of an angle of less than 30°) is obvious if the function of the element is not desired (see MPEP §2144.04(II)(A)).

16. Claims 1-24 are rejected on the ground of nonstatutory double patenting as being unpatentable over claim1-25 of U.S. Patent No. 10,513,801 B2. Although the claims at issue are not identical, they are not patentably distinct from each other because the elimination of an element (i.e., the elimination of an angle of less than 10°) is obvious if the function of the element is not desired (see MPEP §2144.04(II)(A)).

Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEO B. TENTONI whose telephone number is (571)272-1209. The examiner can normally be reached on 7:30-4:00 ET M-F.

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, Christina A. Johnson can be reached on (571)2721176. 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.

LEO B. TENTONI
Primary Examiner
Art Unit 1742

/LEO B TENTONI/
Primary Examiner, Art Unit 1742

Notice of References Cited	Application/Control No. 16/702,920	Applicant(s)/Patent Under Reexamination Barnholtz et al.	
	Examiner LEO B TENTONI	Art Unit 1742	Page 1 of 1

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	J					
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	L					
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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
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	R					
	S					
	T					

NON-PATENT DOCUMENTS

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

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

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/702,920	Barnholtz et al.
	Examiner	Art Unit
	LEO B TENTONI	1742

CPC - Searched*		
Symbol	**Date**	**Examiner**
B32B 37/20, 37/203	01/04/2021	LBT
D01D 5/08, 5/0985, 7/00, 10/02	01/04/2021	LBT
D01F 6/04, 6/06, 6/14, 6/60, 6/62, 6/625	01/04/2021	LBT
D04H 1/26, 1/4291, 1/4309, 1/4334, 1/435, 1/56, 3/007, 3/009, 3/011, 3/015, 3/16, 5/06	01/04/2021	LBT
D10B 2201/22, 2321/02, 2321/022, 2321/06, 2331/02, 2331/04, 2331/041	01/04/2021	LBT

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**
264	131, 171.1, 211.12, 555	01/04/2021	LBT
156	167, 244.11, 324	01/04/2021	LBT

* 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**
CHECKED PARENT AND PROVISIONAL APPLICATIONS	01/04/2021	LBT
INVENTOR NAME SEARCH	01/04/2021	LBT

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/702,920	Barnholtz et al.
	Examiner	Art Unit
	LEO B TENTONI	1742

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)	COMPLETE IF KNOWN	
	Application Number	16/702,920
	Confirmation Number	3577
	Filing Date	December 4, 2019
	First Named Inventor	Steven Lee Barnholtz
	Art Unit	Not yet assigned
	Examiner Name	Not yet assigned
SHEET 7 of 8	Docket Number	10859CCC

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)	COMPLETE IF KNOWN	
	Application Number	16/702,920
	Confirmation Number	3577
	Filing Date	December 4, 2019
	First Named Inventor	Steven Lee Barnholtz
	Art Unit	Not yet assigned
	Examiner Name	Not yet assigned
SHEET 8 of 8	Docket Number	10859CCC

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EXAMINER				**DATE CONSIDERED**		

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EXAMINER	/LEO B TENTONI/		**DATE CONSIDERED** 01/04/2021

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /L.B.T/

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	16/702,920
Inventor(s)	:	Steven Lee Barnholtz, et al.
Filed	:	December 4, 2019
Art Unit	:	Not yet assigned
Examiner	:	Not yet assigned
Docket No.	:	10859CCC
Confirmation No.	:	3577
Customer No.	:	27752
Title	:	Process for Making Fibrous Structures

INFORMATION DISCLOSURE STATEMENT

Pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98, it is respectfully requested that the document(s) cited in this submission be carefully considered by the Examiner and made of record in this case. As provided in §1.97(g), no representation is made or intended that a thorough art search was made. As provided in 37 C.F.R. §1.97(h), this Information Disclosure Statement does not constitute an admission of any kind, and specifically is not an admission that the document(s) cited in this submission is (are), or is (are) considered to be, material to the patentability of the above-identified patent application, as defined in 37 C.F.R. §1.56(b).

This Information Disclosure Statement is being submitted under 37 C.F.R. §1.97(b)(1) together with the patent application or within three months of the filing date of the patent application, or under 37 C.F.R. §1.97(b)(2) within three months of entry into the national stage in an international application. Therefore, no fee is believed to be due.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /L.B.T/

Additional Items to be Noted by the Examiner

All of the cited references were previously considered in prior application U.S. Patent Application Serial No. 15/891,726, filed February 8, 2018. Priority is claimed to said application under 35 U.S.C. §120. Accordingly, copies of these references are not provided with this Statement, pursuant to 37 C.F.R. §1.98(d). The scope of the claims of the present application may be different in scope from any prior applications, including any previous disclaimers. Thus, the Patent Office is reminded that the art cited in any prior application may need to be revisited for the examination of the claims in the present application.

Respectfully submitted,

THE PROCTER & GAMBLE COMPANY

By /C. Brant Cook/
C. Brant Cook
Registration No. 39,151
(513) 983-1004

Date: March 3, 2020
Customer No. 27752

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /L.B.T/

INFORMATION DISCLOSURE STATEMENT

RELATED UNPUBLISHED PENDING U.S. APPLICATION(S)

Examiners Initials	Application Serial Number	Application Filing Date (MM/DD/YYYY)	Inventor(s)	Attorney Docket Number	Copy in IFW?
	12/170,585	07/10/2008	Barnholtz, et al.	10857	Yes
	12/170,578	07/10/2008	Barnholtz, et al.	10858	Yes
	12/170,575	07/10/2008	Barnholtz, et al.	10859	Yes
	14/475,699	09/03/2014	Barnholtz, et al.	10829C	Yes
	15/891,726	02/08/2018	Barnholtz, et al.	10859CC	Yes
	12/170,565	07/10/2008	Suer, et al.	10860	Yes
	12/170,557	07/10/2008	Cabell, et al.	11002	Yes
	12/917,535	11/02/2010	Barnholtz, et al.	11476	Yes
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	12/917,585	11/02/2010	Barnholtz, et al.	11480	Yes
	13/076,492	03/31/2011	Jonathan Paul Brennan, et al.	11672M	Yes

EXAMINER	/LEO B TENTONI/	DATE CONSIDERED	01/04/2021

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /L.B.T/

Bibliographic Data

Application No: 16/702,920

Foreign Priority claimed: ○ Yes ◉ No

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

Verified and Acknowledged: /LEO B TENTONI/ Examiner's Signature | Initials

Title: Process for Making Fibrous Structures

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/04/2019	264	1742	10859CCC
RULE			

APPLICANTS

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Douglas Jay Barkey, Maineville, OH, UNITED STATES

Jonathan Paul Brennan, Cincinnati, OH, UNITED STATES

Ronald Thomas Gorley, Cincinnati, OH, UNITED STATES

CONTINUING DATA

This application is a CON of 15891726 02/08/2018 PAT 10513801

15891726 is a CON of 14475699 09/03/2014 PAT 9926648

14475699 is a CON of 12170575 07/10/2008 PAT 8852474

12170575 has PRO of 60959885 07/17/2007

FOREIGN APPLICATIONS

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12/26/2019

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/702,920	12/04/2019	Steven Lee Barnholtz	10859CCC

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PUBLICATION NOTICE

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THE PROCTER & GAMBLE COMPANY
GLOBAL IP SERVICES
CENTRAL BUILDING, C9
ONE PROCTER AND GAMBLE PLAZA
CINCINNATI, OH 45202

Title: Process for Making Fibrous Structures

Publication No.US-2020-0102671-A1
Publication Date:04/02/2020

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)	COMPLETE IF KNOWN	
	Application Number	16/702,920
	Confirmation Number	3577
	Filing Date	December 4, 2019
	First Named Inventor	Steven Lee Barnholtz
	Art Unit	Not yet assigned
	Examiner Name	Not yet assigned
SHEET 7 of 8	Docket Number	10859CCC

	203	US-2011/0039054 A1	02-17-2011	Cabell, et al.	Equivalent to WO 2011/019908 A1
	204	US-2011/0045261 A1	02-24-2011	Sellars	Equivalent to WO 2009/105490 A1
	205	US-2011/0100574 A1	05-05-2011	Barnholtz, et al.	
	206	US-2011/0104419 A1	05-05-2011	Barnholtz, et al.	
	207	US-2011/0104444 A1	05-05-2011	Barnholtz, et al.	Equivalent to WO 2011/053677 A1
	208	US-2011/0104493 A1	05-05-2011	Barnholtz, et al.	
	209	US-2011/0104970 A1	05-05-2011	Barnholtz, et al.	
	210	US-2011/0209840 A1	09-01-2011	Barnholtz, et al.	
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	213	US-2012/0318693 A1	12-2012	Barnholtz, et al.	

FOREIGN PATENT DOCUMENTS

EXAMINER INITIALS*	Cite No.[1]	Country Code[3] Number[4] Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T[6]
	214	DE 199 59 832 A1	07-12-2001		Abstract	
	215	EP 0 080 382 A1	11-24-1982			
	216	EP 0 156 649 A2	10-02-1985			
	217	EP 0 205 242 B2	12-04-1991			
	218	EP 0 294 137 A1	12-07-1988			
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	221	EP 1 156 147 A1	11-21-2001			
	222	EP 1 156 160 A2	10-02-1985			
	223	EP 1 887 036 A2	02-2008			
	224	GB 2,113,731	08-10-1983			
	225	JP 08-174735 A	07-09-1996		Abstract	
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	228	JP 2002/088660 A	03-27-2002		Abstract	
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	232	WO 98/55295 A1	12-10-1998			
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)	COMPLETE IF KNOWN	
	Application Number	16/702,920
	Confirmation Number	3577
	Filing Date	December 4, 2019
	First Named Inventor	Steven Lee Barnholtz
	Art Unit	Not yet assigned
	Examiner Name	Not yet assigned
SHEET 8 of 8	Docket Number	10859CCC

	235	WO 00/63486 A1	10-26-2000			
	236	WO 01/09023 A1	02-08-2001			
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	242	WO 2005/106085 A1	11-10-2005			
	243	WO 2005/118934 A1	12-15-2005			
	244	WO 2006/027810 A1	03-16-2006			
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	246	WO 2007/070075 A1	06-21-2007			
	247	WO 2007/078344 A1	07-12-2007			
	248	WO 2007/098449 A1	08-30-2007			
	249	WO 2007/100936 A2	09-07-2007			
	250	WO 2007/124866 A1	11-08-2007		Abstract	
	251	WO 2007/135624 A2	11-29-2007			
	252	WO 2008/005500 A2	01-2008			
	253	WO 2008/050311 A2	05-2008			
	254	WO 2009/010940 A2	01-2009			
	255	WO 2009/010941 A2	01-22-2009			
	256	WO 2009/010942 A2	01-2009			
EXAMINER				**DATE CONSIDERED**		

NON PATENT LITERATURE DOCUMENTS

EXAMINER INITIALS*	Cite No.[1]	Provide relevant information to identify the Non-Patent Literature being submitted (e.g., name of the author (in CAPITAL LETTERS), title of the article, 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, related application serial number, filing date and brief description of the papers being submitted).	T[2]
	257	Anonymous, "NanoDispense® Contact Angle Measurements", *First Ten Angstroms*, (October 3, 2004). Retrieved from the Internet: URL: http://www.firsttenangstroms.com/pdfdocs/NanoDispenseExamples.pdf, (retrieved February 15, 2011) Entire document.	
	258	Complete Textile Glossary, Celaneses Acetate (2001), definition of "filament"	
	259	Meyer, et al., "Comparison between different presentations of pore size distribution in porous materials." Fresenius J. Anal Chem. 1999. 363: pp. 174-178	
	260	All Office Actions in U.S. Application Serial Nos. 13/106,302 (P&G case 10857C), 12/170,578 (P&G case 10858), 12/170,575 (P&G case 10859) 14/475,699 (P&G case 10859C), 15/891,726 (P&G case 10859CC),12/170,557 (P&G case 11002), 12/917,535 (P&G case 11476), 12/917,547 (P&G case 11477), 12/917,558 (P&G case 11478), 12/917,574 (P&G case 11479), 12/917,585 (P&G case 11480), and 13/076,492 (P&G case 11672M) - SEE PAIR.	
EXAMINER		**DATE CONSIDERED**	

Electronic Acknowledgement Receipt

EFS ID:	38750671
Application Number:	16702920
International Application Number:	
Confirmation Number:	3577
Title of Invention:	Process for Making Fibrous Structures
First Named Inventor/Applicant Name:	Steven Lee Barnholtz
Customer Number:	27752
Filer:	Christopher Brant Cook/Mary Bryan
Filer Authorized By:	Christopher Brant Cook
Attorney Docket Number:	10859CCC
Receipt Date:	03-MAR-2020
Filing Date:	04-DEC-2019
Time Stamp:	10:54:48
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	Transmittal Letter	10859CCCIDSLetter.pdf	24393 b337b631032f95b6ef8228ab9f9f0a8d3813e7fc	no	3

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	10859CCCIDSListofReferences.pdf	53194 cb236ffb0c0c4007c76712304cd6ff8eed1db18f	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
			Total Files Size (in bytes):	77587	

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	16/702,920
Inventor(s)	:	Steven Lee Barnholtz, et al.
Filed	:	December 4, 2019
Art Unit	:	Not yet assigned
Examiner	:	Not yet assigned
Docket No.	:	10859CCC
Confirmation No.	:	3577
Customer No.	:	27752
Title	:	Process for Making Fibrous Structures

INFORMATION DISCLOSURE STATEMENT

Pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98, it is respectfully requested that the document(s) cited in this submission be carefully considered by the Examiner and made of record in this case. As provided in §1.97(g), no representation is made or intended that a thorough art search was made. As provided in 37 C.F.R. §1.97(h), this Information Disclosure Statement does not constitute an admission of any kind, and specifically is not an admission that the document(s) cited in this submission is (are), or is (are) considered to be, material to the patentability of the above-identified patent application, as defined in 37 C.F.R. §1.56(b).

This Information Disclosure Statement is being submitted under 37 C.F.R. §1.97(b)(1) together with the patent application or within three months of the filing date of the patent application, or under 37 C.F.R. §1.97(b)(2) within three months of entry into the national stage in an international application. Therefore, no fee is believed to be due.

Additional Items to be Noted by the Examiner

All of the cited references were previously considered in prior application U.S. Patent Application Serial No. 15/891,726, filed February 8, 2018. Priority is claimed to said application under 35 U.S.C. §120. Accordingly, copies of these references are not provided with this Statement, pursuant to 37 C.F.R. §1.98(d). The scope of the claims of the present application may be different in scope from any prior applications, including any previous disclaimers. Thus, the Patent Office is reminded that the art cited in any prior application may need to be revisited for the examination of the claims in the present application.

Respectfully submitted,

THE PROCTER & GAMBLE COMPANY

By /C. Brant Cook/
C. Brant Cook
Registration No. 39,151
(513) 983-1004

Date: March 3, 2020
Customer No. 27752

INFORMATION DISCLOSURE STATEMENT

RELATED UNPUBLISHED PENDING U.S. APPLICATION(S)

Examiners Initials	Application Serial Number	Application Filing Date (MM/DD/YYYY)	Inventor(s)	Attorney Docket Number	Copy in IFW?
	12/170,585	07/10/2008	Barnholtz, et al.	10857	Yes
	12/170,578	07/10/2008	Barnholtz, et al.	10858	Yes
	12/170,575	07/10/2008	Barnholtz, et al.	10859	Yes
	14/475,699	09/03/2014	Barnholtz, et al.	10829C	Yes
	15/891,726	02/08/2018	Barnholtz, et al.	10859CC	Yes
	12/170,565	07/10/2008	Suer, et al.	10860	Yes
	12/170,557	07/10/2008	Cabell, et al.	11002	Yes
	12/917,535	11/02/2010	Barnholtz, et al.	11476	Yes
	12/917,547	11/02/2010	Barnholtz, et al.	11477	Yes
	12/917,558	11/02/2010	Barnholtz, et al.	11478	Yes
	12/917,574	11/02/2010	Barnholtz, et al.	11479	Yes
	12/917,585	11/02/2010	Barnholtz, et al.	11480	Yes
	13/076,492	03/31/2011	Jonathan Paul Brennan, et al.	11672M	Yes

EXAMINER	**DATE CONSIDERED**

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/702,920

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), (i), 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))	24 minus 20 =	* 4			OR	x 100 =	400
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 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	2120

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1)		(Column 2)	(Column 3)					
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
16/702,920	12/04/2019	1746	2120	10859CCC	24	2

CONFIRMATION NO. 3577

FILING RECEIPT

27752
THE PROCTER & GAMBLE COMPANY
GLOBAL IP SERVICES
CENTRAL BUILDING, C9
ONE PROCTER AND GAMBLE PLAZA
CINCINNATI, OH 45202

OC000000113558735

Date Mailed: 12/27/2019

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)

Steven Lee Barnholtz, West Chester, OH;
Paul Dennis Trokhan, Hamilton, OH;
Michael Donald Suer, Cincinnati, OH;
Douglas Jay Barkey, Maineville, OH;
Jonathan Paul Brennan, Cincinnati, OH;
Ronald Thomas Gorley, Cincinnati, OH;

Applicant(s)

The Procter & Gamble Company, Cincinnati, OH;

Assignment For Published Patent Application

The Procter & Gamble Company

Power of Attorney: The patent practitioners associated with Customer Number 27752

Domestic Priority data as claimed by applicant

This application is a CON of 15/891,726 02/08/2018 PAT 10513801
which is a CON of 14/475,699 09/03/2014 PAT 9926648
which is a CON of 12/170,575 07/10/2008 PAT 8852474
which claims benefit of 60/959,885 07/17/2007

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: 12/26/2019

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/702,920**

Projected Publication Date: 04/02/2020

Non-Publication Request: No

Early Publication Request: No

Title

Process for Making Fibrous Structures

Preliminary Class

156

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.

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

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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PTO/AIA/82A (07-13)
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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/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	Not yet assigned
Filing Date	December 4, 2019
First Named Inventor	Steven Lee Barnholtz
Title	Process for Making Fibrous Structures
Art Unit	Not yet assigned
Examiner Name	Not yet assigned
Attorney Docket Number	10859CCC

SIGNATURE of Applicant or Patent Practitioner

Signature	/C. Brant Cook/	Date (Optional)	
Name	C. Brant Cook	Registration Number	39151
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)	The Procter & Gamble Company		

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 1 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.**

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Doc Code: PA..
Document Description: Power of Attorney

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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: 27752

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:

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OR

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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):

The Procter & Gamble Company

☐ 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	/Jay A Krebs/	Date (Optional)	
Name	Jay A. Krebs		
Title	Senior Counsel, Global Patent Systems Manager, Assistant Secretary, The Procter & Gamble Company		

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.**

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PTO/AIA/82C (07-13)
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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

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

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether 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:	Process for Making Fibrous Structures
First Named Inventor/Applicant Name:	Steven Lee Barnholtz
Filer:	Christopher Brant Cook/Mary Bryan
Attorney Docket Number:	10859CCC

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:				
CLAIMS IN EXCESS OF 20	1202	4	100	400
Miscellaneous-Filing:				
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**2120**

Electronic Acknowledgement Receipt

EFS ID:	37925165
Application Number:	16702920
International Application Number:	
Confirmation Number:	3577
Title of Invention:	Process for Making Fibrous Structures
First Named Inventor/Applicant Name:	Steven Lee Barnholtz
Customer Number:	27752
Filer:	Christopher Brant Cook/Mary Bryan
Filer Authorized By:	Christopher Brant Cook
Attorney Docket Number:	10859CCC
Receipt Date:	04-DEC-2019
Filing Date:	
Time Stamp:	13:26:51
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$2120
RAM confirmation Number	E2019B4D27276864
Deposit Account	162480
Authorized User	Mary Bryan

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)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal of New Application	10859CCCTransmittal.pdf	297567 2f85fd2d69e345c5b701b10af38ef20ef404d4e1	no	2
Warnings:					
Information:					
2	Specification	10859CCCApplication.pdf	209708 f9e84dce90fae468389532027fb95261805721dc	no	32
Warnings:					
Information:					
3	Drawings-only black and white line drawings	10859CCCDrawwithLabel.pdf	1509504 b39cade783c1bbc1d9788a6b0c8d44cd3e0ffc69	no	12
Warnings:					
Information:					
4	Oath or Declaration filed	10859CCDeclaration.pdf	353501 11a5b20676ea01358896af928f4e1c92a5f67181	no	6
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:					
5	Application Data Sheet	10859CCCADS.pdf	1256620 f3810f4d1d82ca9fad93b8d164add8db29e5363a	no	10
Warnings:					
Information:					
6	Assignee showing of ownership per 37 CFR 3.73	10859Assignment.pdf	434105 5fdd443dc74315d1200797923422095833827a98	no	9
Warnings:					

Information:					
7	Power of Attorney	10859CCCPOAandTransmittal.pdf	196630 4bf81e9b59a257a49d05f52a1588acb078854e58	no	4
Warnings:					
Information:					
8	Fee Worksheet (SB06)	fee-info.pdf	36934 448fcdae655eac9d71a98f1c0228d19401b679d8	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	4294569	

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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.

PTO/AIA/15 (10-17)
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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	10859CCC
First Named Inventor	Steven Lee Barnholtz
Title	Process for Making Fibrous Structures
Priority Mail Express® Label No.	N/A

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☐ **Fee Transmittal Form** (PTO/SB/17 or equivalent)
2. ☐ **Applicant asserts small entity status.** See 37 CFR 1.27
3. ☐ **Applicant certifies micro entity status.** See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent.
4. ☑ **Specification** [*Total Pages* 32] Both the claims and abstract must start on a new page. *(See MPEP § 608.01(a) for information on the preferred arrangement)*
5. ☑ **Drawing(s)** (35 U.S.C. 113) [*Total Sheets* 12]
6. **Inventor's Oath or Declaration** [*Total Pages* 6] *(including substitute statements under 37 CFR 1.64 and assignments serving as an oath or declaration under 37 CFR 1.63(e))*
   a. ☐ Newly executed (original or copy)
   b. ☐ A copy from a prior application (37 CFR 1.63(d))
7. ☑ **Application Data Sheet** ** See note below.* See 37 CFR 1.76 (PTO/AIA/14 or equivalent)
8. **CD-ROM or CD-R** in duplicate, large table, or Computer Program (*Appendix*)
   ☐ Landscape Table on CD
9. **Nucleotide and/or Amino Acid Sequence Submission** (*if applicable, items a. – c. are required*)
   a. ☐ Computer Readable Form (CRF)
   b. ☐ Specification Sequence Listing on:
      i. ☐ CD-ROM or CD-R (2 copies); or
      ii. ☐ Paper
   c. ☐ Statements verifying identity of above copies

ADDRESS TO:

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

ACCOMPANYING APPLICATION PAPERS

10. ☑ **Assignment Papers** (cover sheet & document(s))
    Name of Assignee: The Procter & Gamble Company
11. ☐ **37 CFR 3.73(c) Statement** (*when there is an assignee*) ☑ **Power of Attorney**
12. ☐ **English Translation Document** (*if applicable*)
13. ☐ **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
    ☐ Copies of citations attached
14. ☐ **Preliminary Amendment**
15. ☐ **Return Receipt Postcard** (*MPEP § 503*) (*Should be specifically itemized*)
16. ☐ **Certified Copy of Priority Document(s)** (*if foreign priority is claimed*)
17. ☐ **Nonpublication Request** Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent.
18. ☐ **Other:** _____

Note*: (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must be included in an Application Data Sheet (ADS).
(2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

19. CORRESPONDENCE ADDRESS

☐ The address associated with Customer Number: _____ **OR** ☐ Correspondence address below

Name					
Address					
City		State		Zip Code	
Country		Telephone		Email	

Signature	/C. Brant Cook/	Date	December 4, 2019
Name (Print/Type)	C. Brant Cook	Registration No. (Attorney/Agent)	39,151

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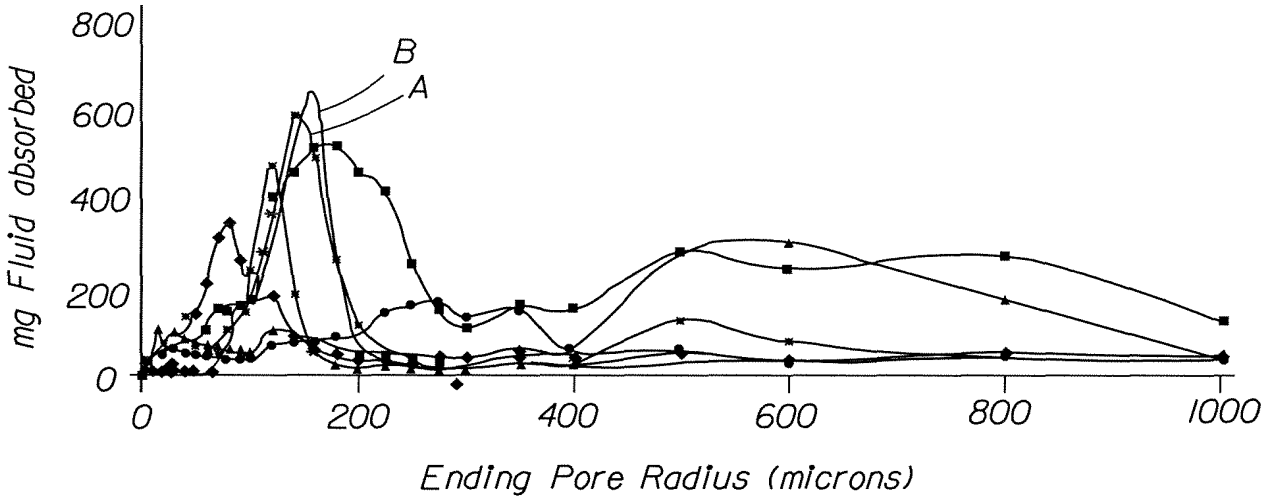
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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
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9. 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.



◆ Huggies (coform prior art)	▪ Huggies Wash Cloth (coform prior art)
▲ Duramax	— Concert EBT.055.1010 TBAL
× LBAL-DUNI embossed	• Bounty
✱ Invention Example A	– Invention Example B

Fig. 1

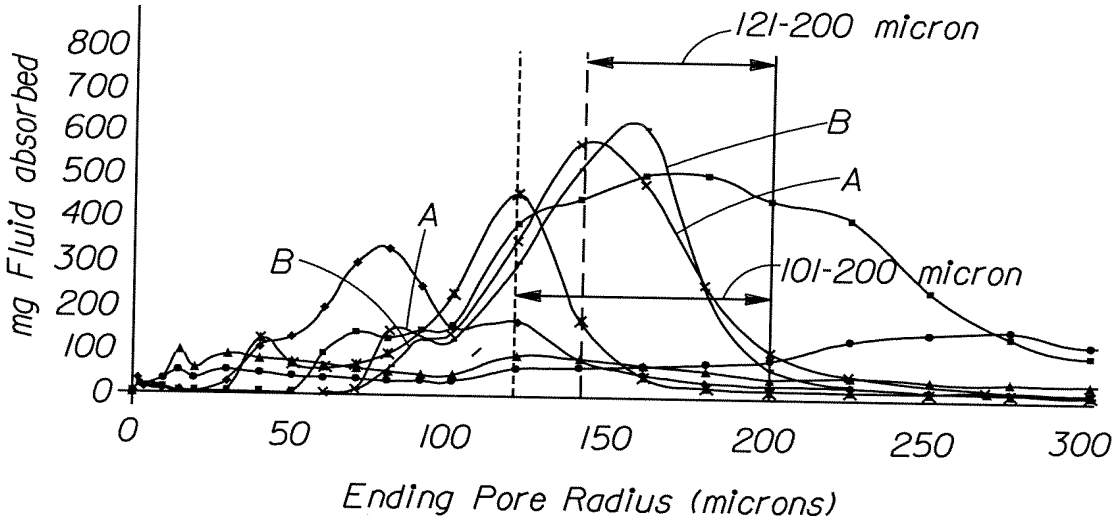

121-200 micron
101-200 micron
B
A
B
A
mg Fluid absorbed
800
700
600
500
400
300
200
100
0
0
50
100
150
200
250
300
Ending Pore Radius (microns)
Huggies (coform prior art)
Duramax
LBAL-DUNI embossed
Invention Example A
Huggies Wash Cloth (coform prior art)
Concert EBT.055.1010 TBAL
Bounty
Invention Example B

Fig. 2

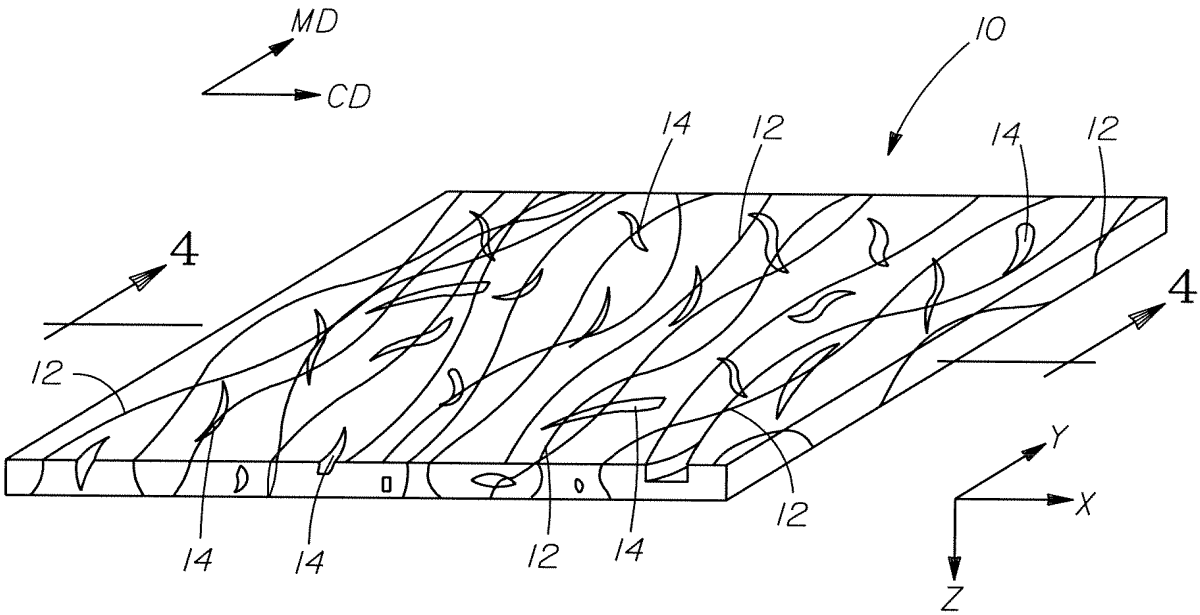

MD
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Fig. 3

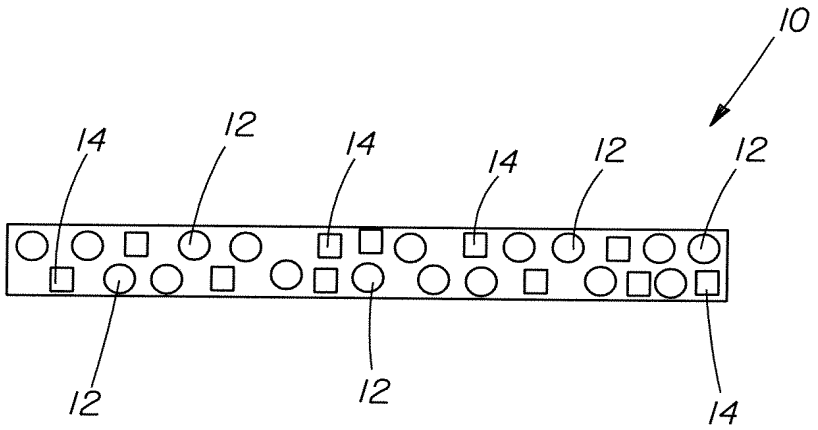

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Fig. 4

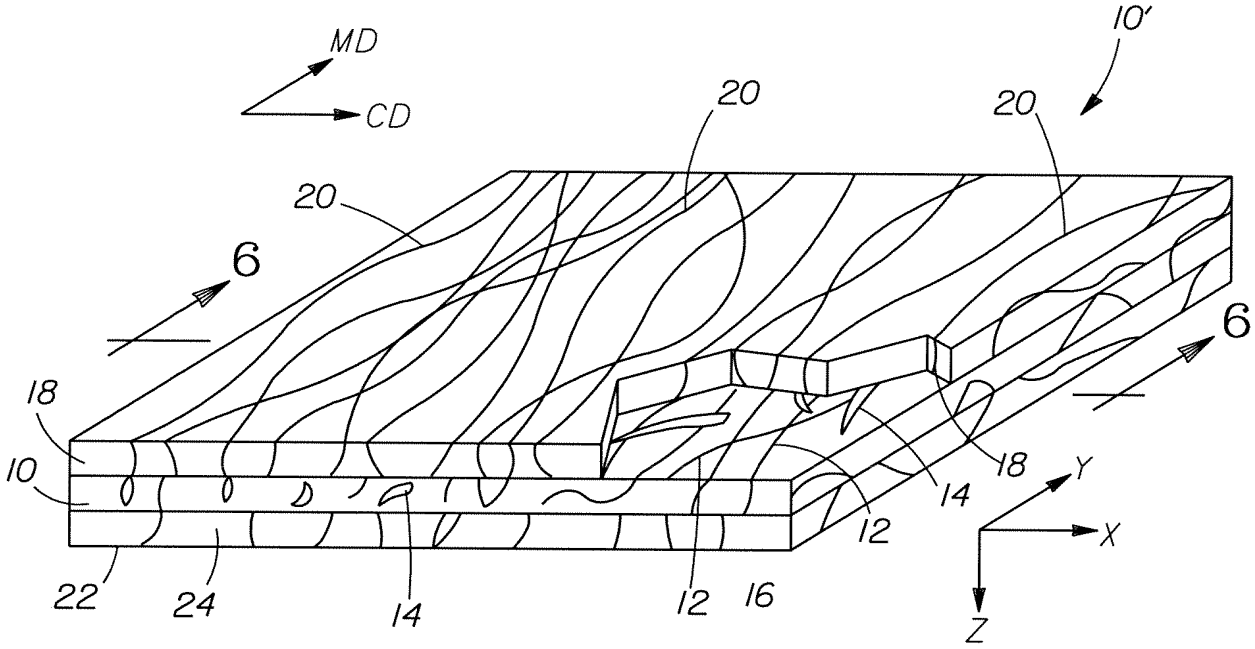


Fig. 5

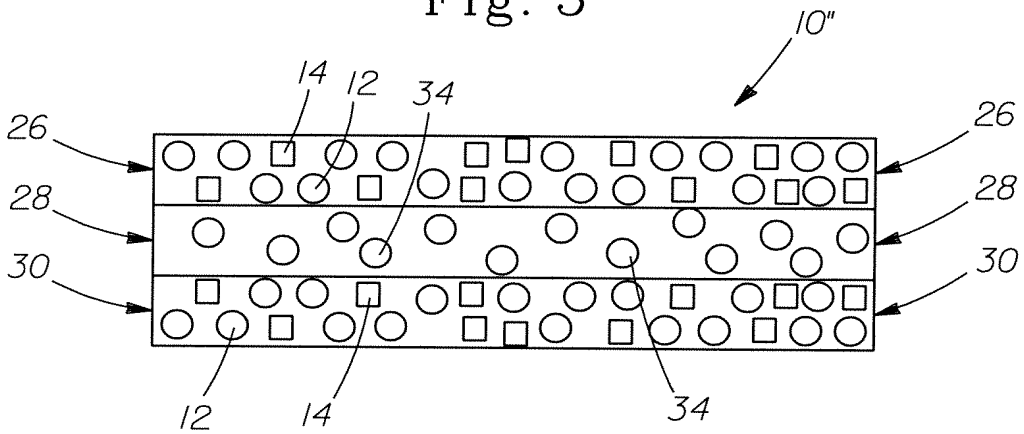


Fig. 6

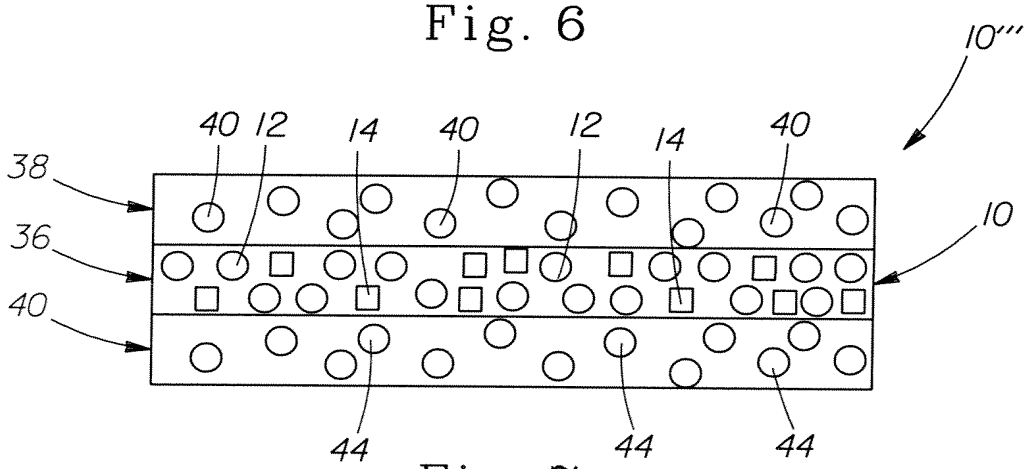


Fig. 7

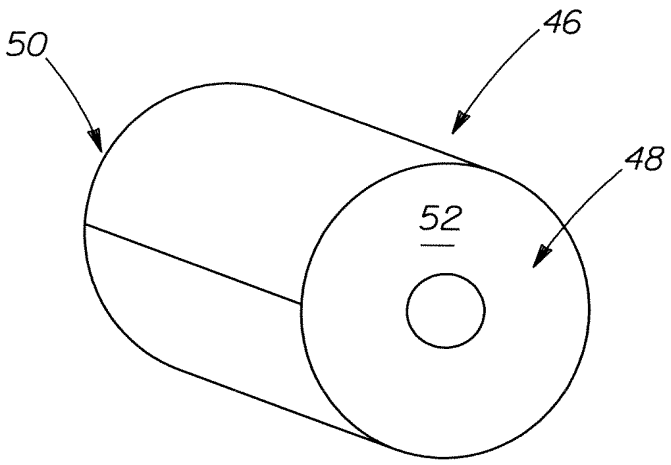


Fig. 8

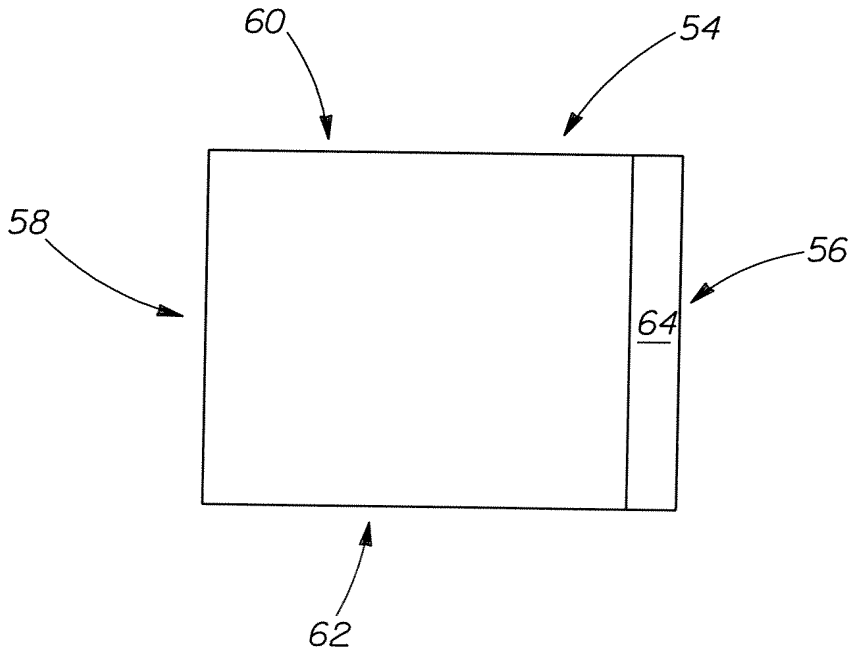


Fig. 9

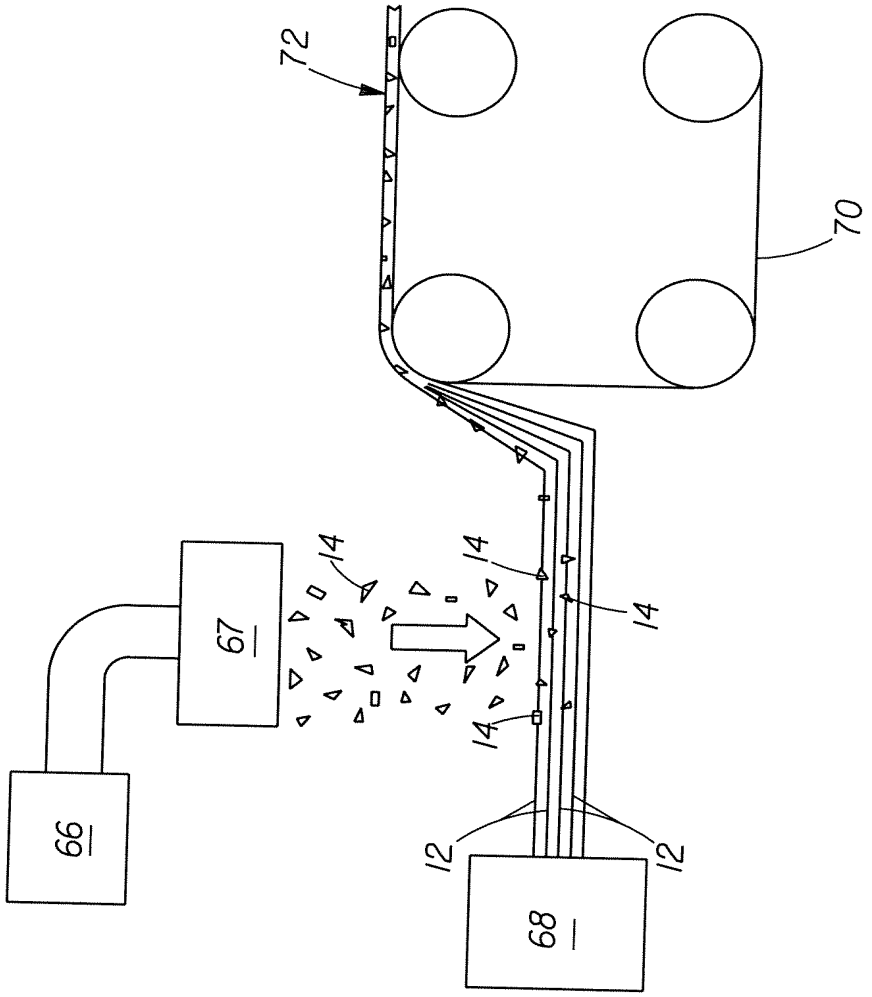


Fig. 10

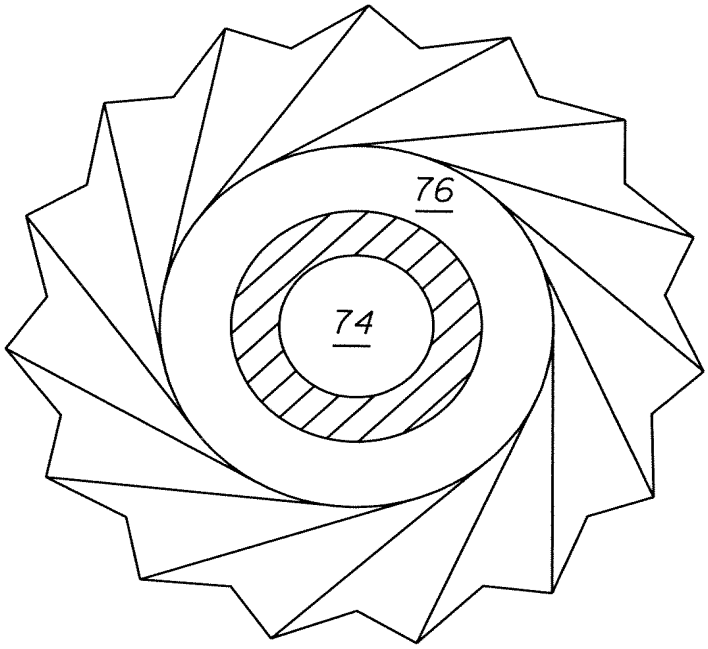


Fig. 11

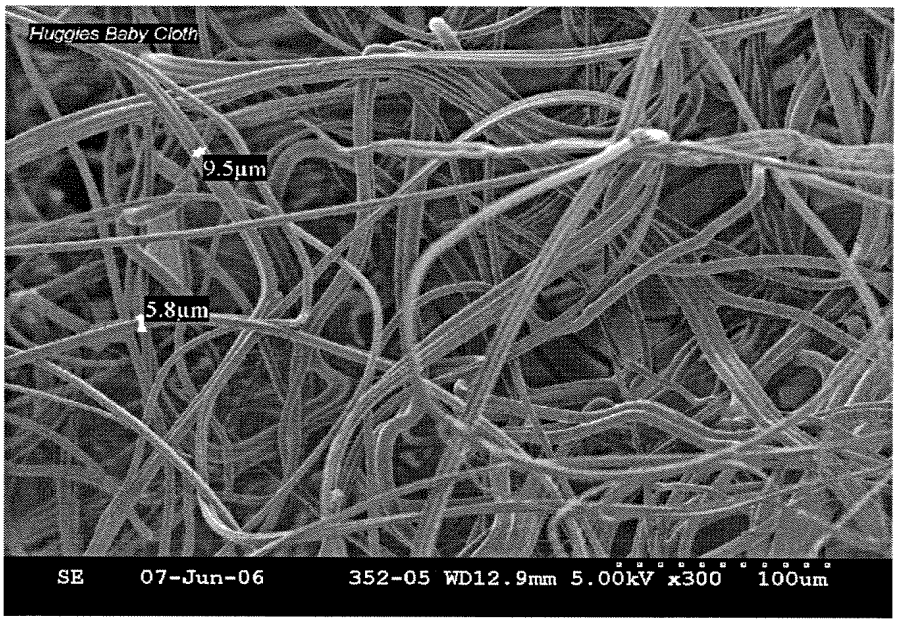

Huggies Baby Cloth
9.5µm
5.8µm
SE 07-Jun-06 352-05 WD12.9mm 5.00kV x300 100um

Fig. 12

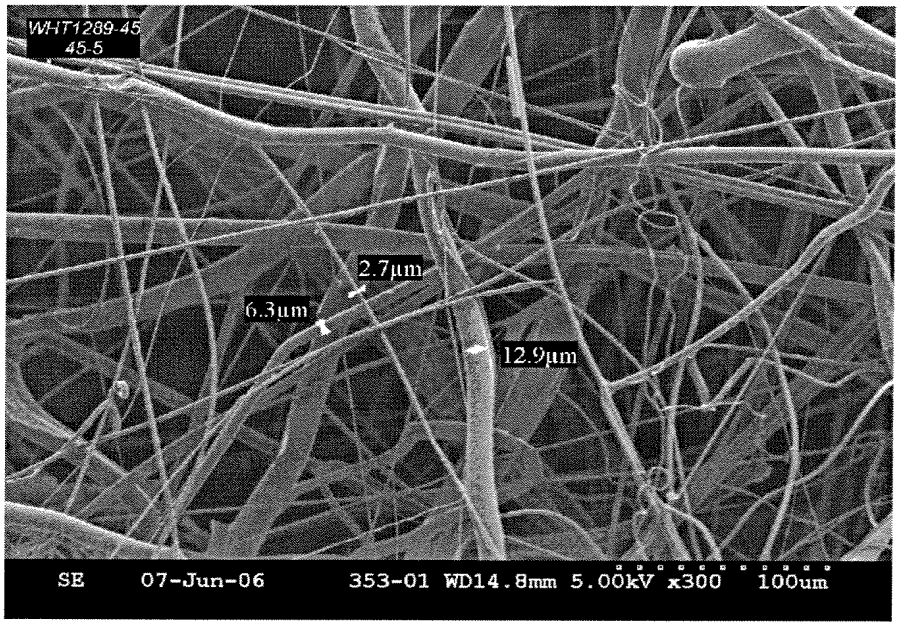

WHT1289-45
45-5
2.7µm
6.3µm
12.9µm
SE 07-Jun-06 353-01 WD14.8mm 5.00kV x300 100um

Fig. 13

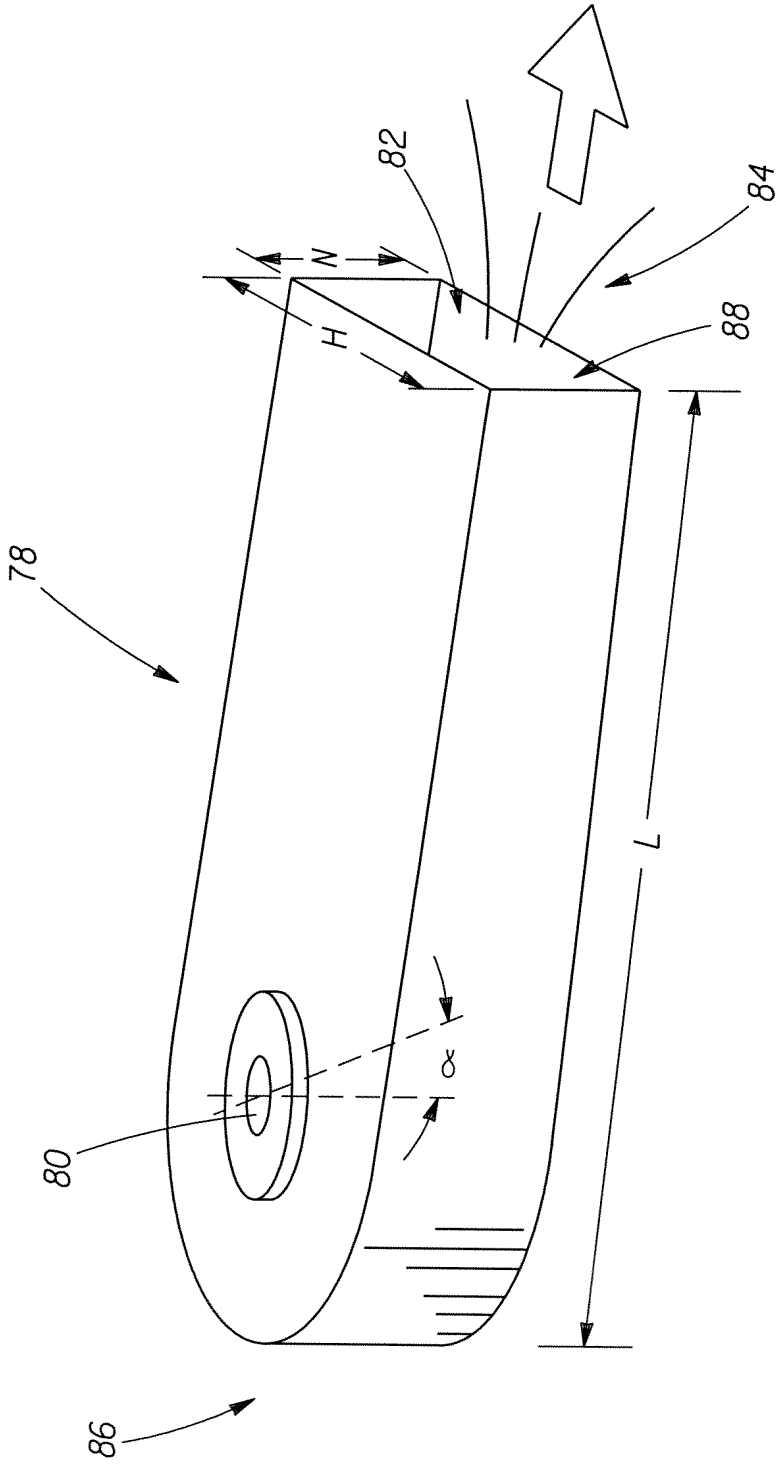


Fig. 14

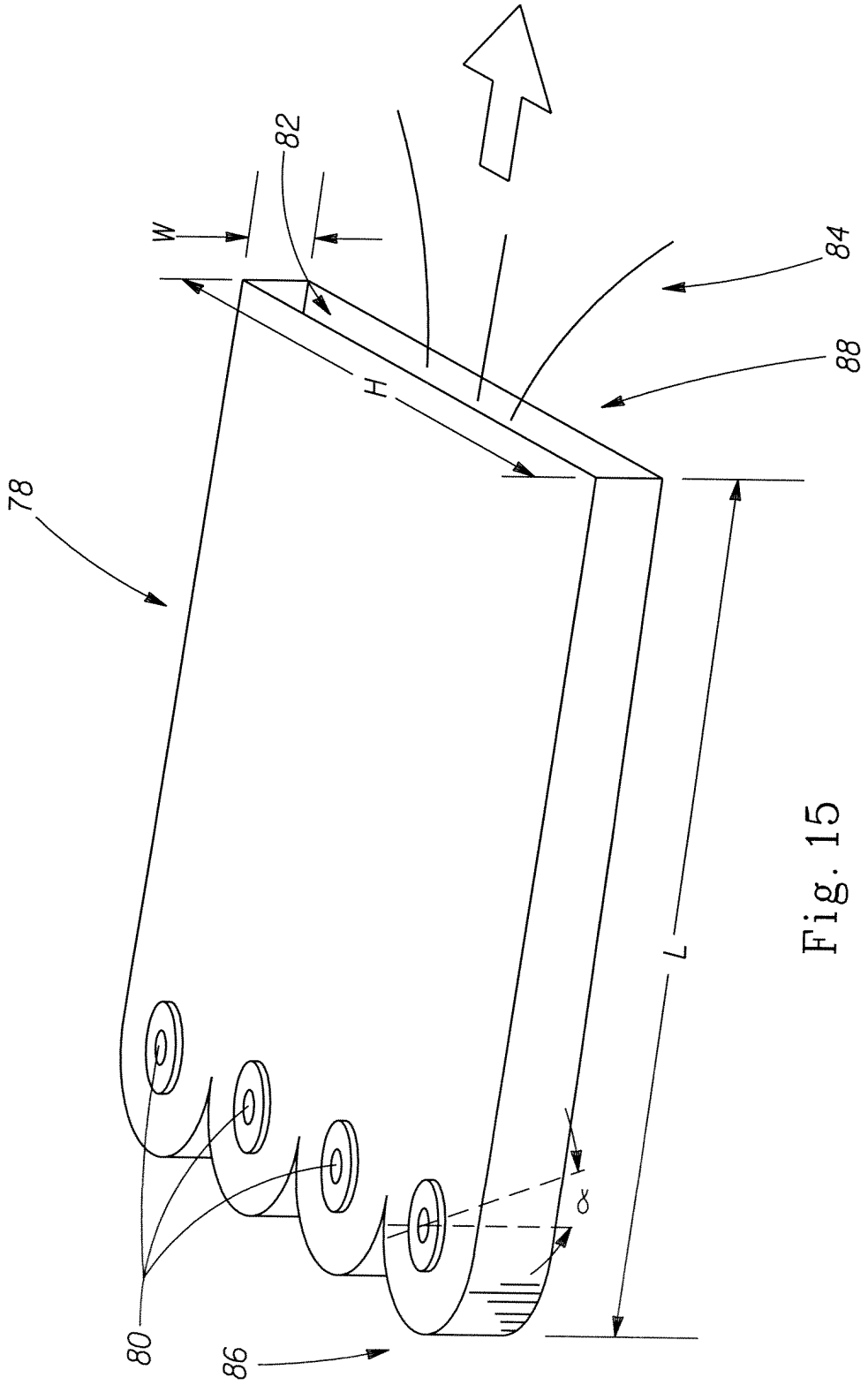


Fig. 15



Fig. 16A

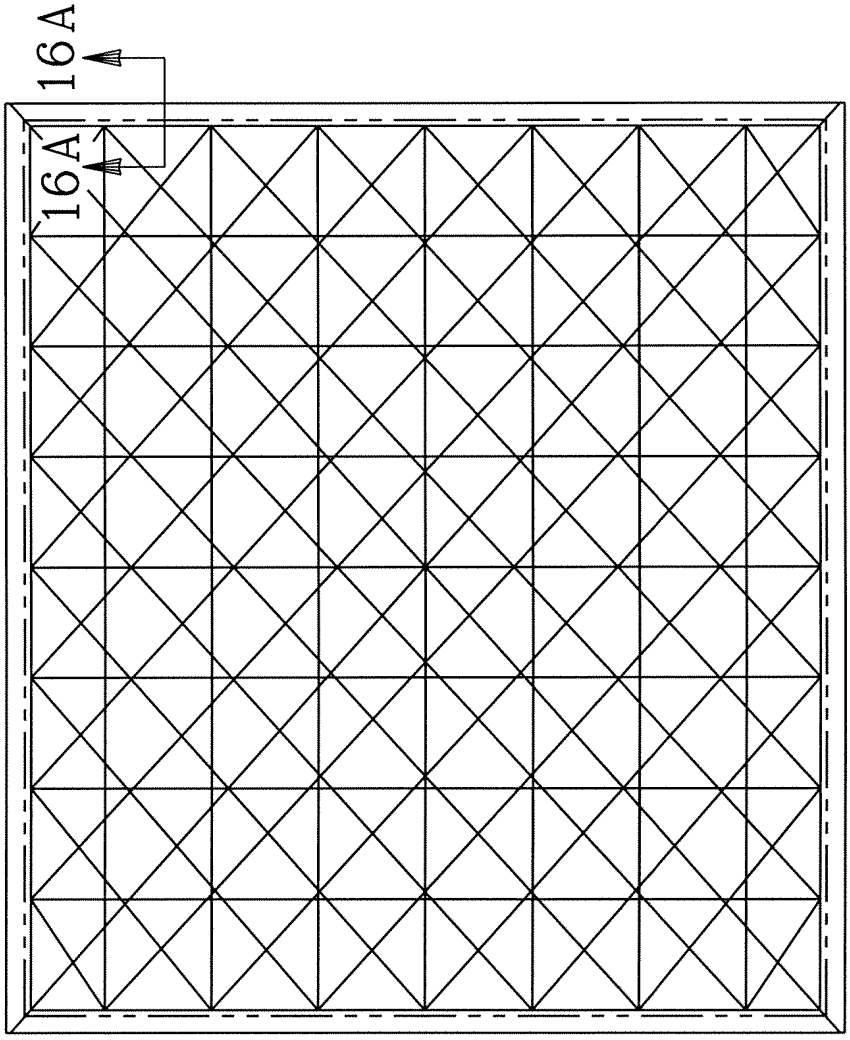


Fig. 16

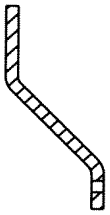


Fig. 17A

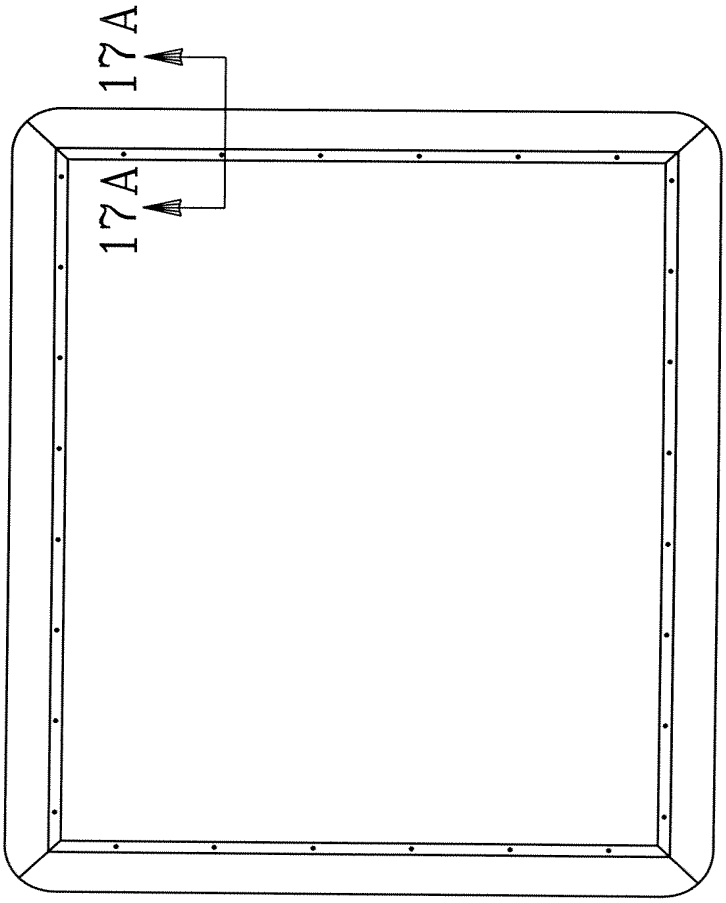


Fig. 17

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

Title of Invention	Process for Making Fibrous Structures (10859CC)

As the below named inventor, I hereby declare that:

This declaration is directed to:

- [x] The attached application, or
- [ ] United States application or PCT international application number _____

filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

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LEGAL NAME OF INVENTOR

Inventor: Steven Lee Barnholtz Date (Optional): 02/08/2018

Signature: /Steven Lee Barnholtz/

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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LEGAL NAME OF INVENTOR

Inventor: Paul Dennis Trokhan Date (Optional) :_____

Signature: /Paul Dennis Trokhan/

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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LEGAL NAME OF INVENTOR

Inventor: Michael Donald Suer Date (Optional): 2/8/2018

Signature: /Michael Donald Suer/

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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LEGAL NAME OF INVENTOR

Inventor: Douglas Jay Barkey Date (Optional): 02/09/2018

Signature: /Douglas Jay Barkey/

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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LEGAL NAME OF INVENTOR

Inventor: Jonathan Paul Brennan Date (Optional): February 9, 2018

Signature: /Jonathan Paul Brennan/

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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LEGAL NAME OF INVENTOR

Inventor: Ronald Thomas Gorley Date (Optional): _____

Signature: /Ronald Thomas Gorley/

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10859CCC
	Application Number	
Title of Invention	Process for Making Fibrous Structures	

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
	Steven	Lee	Barnholtz	

Residence Information (Select One) ● US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
West Chester	OH	US

Mailing Address of Inventor:

Address 1	One P&G Plaza
Address 2	
City	Cincinnati
State/Province	OH
Postal Code	45202
Country	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Paul	Dennis	Trokhan	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
Hamilton	OH	US

Mailing Address of Inventor:

Address 1	One P&G Plaza
Address 2	
City	Cincinnati
State/Province	OH
Postal Code	45202
Country	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Michael	Donald	Suer	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10859CCC
	Application Number	
Title of Invention	Process for Making Fibrous Structures	

City	Cincinnati	State/Province	OH	Country of Residence	US

Mailing Address of Inventor:

Address 1	One P&G Plaza		
Address 2			
City	Cincinnati	State/Province	OH
Postal Code	45202	Country	US

Inventor 4 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Douglas	Jay	Barkey	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Maineville	State/Province	OH	Country of Residence	US

Mailing Address of Inventor:

Address 1	One P&G Plaza		
Address 2			
City	Cincinnati	State/Province	OH
Postal Code	45202	Country	US

Inventor 5 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Jonathan	Paul	Brennan	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Cincinnati	State/Province	OH	Country of Residence	US

Mailing Address of Inventor:

Address 1	One P&G Plaza		
Address 2			
City	Cincinnati	State/Province	OH
Postal Code	45202	Country	US

Inventor 6 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Ronald	Thomas	Gorley	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Cincinnati	State/Province	OH	Country of Residence	US

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10859CCC
	Application Number	
Title of Invention	Process for Making Fibrous Structures	

Mailing Address of Inventor:

Address 1	One P&G Plaza		
Address 2			
City	Cincinnati	**State/Province**	OH
Postal Code	45202	**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.**

Customer Number	27752		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	Process for Making Fibrous Structures		
Attorney Docket Number	10859CCC	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	12	**Suggested Figure for Publication (if any)**	

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 i

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.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10859CCC
	Application Number	
Title of Invention	Process for Making Fibrous Structures	

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	27752		

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	15/891726	2018-02-08

Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15/891726	Continuation of	14/475699	2014-09-03	9926648	2018-03-27

Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14/475699	Continuation of	12/170575	2008-07-10	8852474	2014-10-07

Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
12/170575	Claims benefit of provisional	60/959885	2007-07-17

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

Foreign Priority Information:

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	Application Number	
Title of Invention	Process for Making Fibrous Structures	

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).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

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	10859CCC
	Application Number	
Title of Invention	Process for Making Fibrous Structures	

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)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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	10859CCC
	Application Number	
Title of Invention	Process for Making Fibrous Structures	

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	The Procter & Gamble Company		
Mailing Address Information For Applicant:			
Address 1	Attention: Chief Patent Counsel		
Address 2	One Procter & Gamble Plaza		
City	Cincinnati	**State/Province**	OH
Country	US	Postal Code	45202
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee 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.

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10859CCC
	Application Number	
Title of Invention	Process for Making Fibrous Structures	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/C. Brant Cook/			Date (YYYY-MM-DD)	2019-12-04
First Name	C. Brant	Last Name	Cook	Registration Number	39151

Additional Signature may be generated within this form by selecting the Add button. Add

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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	10859CCC
	Application Number	
Title of Invention	Process for Making Fibrous Structures	

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.**

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 CooperationTreaty.

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.

GLOBAL GENERAL ASSIGNMENT

WHEREAS I/we, the undersigned inventor(s) herewith declare that I am the sole inventor/we are the joint inventors and I/we have made a certain invention as set forth in a patent application (including industrial designs and utility models) entitled **PROCESS FOR MAKING FIBROUS STRUCTURES**, Attorney's Docket No. **10859P** and filed in the **United States** Patent Office as Number 60/959,885, on **July 17, 2007** (the hereinafter named assignee being authorized to insert said Number and filing date when ascertained):

Steven Lee Barnholtz of **5835 Olympia Fields Court, West Chester, OH 45069**;
Paul Dennis Trokhan of **1356 Warvel Road, Hamilton, OH 45013**;
Michael Donald Suer of **5470 Longlake Court, Cincinnati, OH 45247**;
Douglas Jay Barkey of **964 Airymeadows Drive, Maineville, OH 45039**;
Jonathan Paul Brennan of **4459 Hickory Nut Court, Cincinnati, OH 45241**;
Ronald Thomas Gorley of **7835 New Brunswick Drive, Cincinnati, OH 45241**;

I/We made said invention set forth in said patent application while employed by, or otherwise under an obligation to assign said invention to The Procter & Gamble Company or one of its Affiliates (including, Procter & Gamble Asia Pacific Ltd.; Procter & Gamble Australia Pty. Ltd.; Procter & Gamble Technology (Beijing) Co., Ltd.; Procter & Gamble Japan K.K.; Procter & Gamble Hong Kong Ltd.; Procter & Gamble India, Ltd.; Procter & Gamble Indonesia; Procter & Gamble Korea, Inc.; Procter & Gamble Malaysia Sdn. Bhd.; Procter & Gamble Philippines, Inc.; Procter & Gamble Taiwan Ltd; Procter & Gamble Manufacturing (Thailand) Ltd.; Procter & Gamble (Guangzhou) Ltd.; P&G Northeast Asia Pte Ltd; Max Factor K.K.; P&G K.K.; Procter & Gamble Asia Pte. Limited; Procter & Gamble de Mexico; Procter & Gamble de Venezuela, and P&G-Clairol, Inc.) and acknowledge my/our obligation at the time the invention was made to assign said invention to The Procter & Gamble Company or the Affiliate, respectively. Pursuant to said obligation and (in the case of employment by or obligation to the Affiliate) at the request of the Affiliate, I/we assign to The Procter & Gamble Company, its legal representatives, successors and assigns, the entire right, title and interest (including the right to claim priority of the filing date of said patent application under international conventions) in said invention as set forth in said patent application, and in all patents of the United States and of any other country which may be issued for said invention, as fully and completely as the same would have been held by me/us had this assignment not been made. The entire right, title and interest shall vest irrevocably in The Procter & Gamble Company. I/We further agree upon request, without additional compensation but at no expense to me/us, to execute or assent to applications, and to execute all other legal documents as may be necessary or desirable to vest the enjoyment of the rights assigned to The Procter & Gamble Company, its legal representatives, successors and assigns, or as said Company may direct.

I/We request the Commissioner of Patents and Trademarks to issue any Letters Patent of the United States which may be issued for said invention herein assigned and as set forth in U. S. Application Serial Number 12/170,575 (the hereinafter named assignee being authorized to insert said U.S. Serial Number when ascertained) to The Procter & Gamble Company, its legal representatives, successors or assigns, as the sole owner of the entire right, title, and interest in said patent and the invention and the invention covered thereby.

The ASSIGNMENT of said invention is effective as of the earlier of 1) the date of execution shown below or 2) the filing date of the first-filed of said patent application(s).

Steven Lee Barnholtz

20 July 2007
Date

State of Ohio }
} SS
County of Hamilton }

On this 20th day of July, 2007, before me personally appeared Steven Lee Barnholtz, to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

NOTARIAL SEAL STATE OF OHIO
CONSTANCE J. BAKER
Notary Public, State of Ohio
My Commission Expires 02-15-11

Constance J Baker
Notary Public/Witness

Paul Dennis Trokhan

20 JUL 2007
Date

State of Ohio }
} SS
County of Hamilton }

On this 20th day of July, 2007, before me personally appeared Paul Dennis Trokhan, to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

NOTARIAL SEAL STATE OF OHIO
CONSTANCE J. BAKER
Notary Public, State of Ohio
My Commission Expires 02-15-11

Constance J Baker
Notary Public/Witness

Michael Donald Suer

20 Jul 2007
Date

State of Ohio }
} SS
County of Hamilton }

On this 20th day of July, 2007, before me personally appeared Michael Donald Suer, to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

NOTARIAL SEAL STATE OF OHIO
CONSTANCE J. BAKER
Notary Public, State of Ohio
My Commission Expires 02-15-11

Constance J Baker
Notary Public/Witness

Douglas Jay Barkey

Douglas Jay Barkey

23-July-2007
Date

State of Ohio }
} SS
County of Hamilton }

On this 23rd day of July, 2007, before me personally appeared Douglas Jay Barkey, to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

NOTARIAL SEAL STATE OF OHIO

CONSTANCE J. BAKER
Notary Public, State of Ohio
My Commission Expires 02-15-11

Constance J Baker
Notary Public/Witness

Jonathan Paul Brennan

Date

State of Ohio }
} SS
County of }

On this _____ day of _____, 2007, before me personally appeared Jonathan Paul Brennan, to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

Notary Public/Witness

Ronald Thomas Gorley

Date

State of Ohio }
} SS
County of }

On this _____ day of _____, 2007, before me personally appeared Ronald Thomas Gorley , to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

Notary Public/Witness

REVISED: 23 June 2006

GLOBAL GENERAL ASSIGNMENT

WHEREAS I/we, the undersigned inventor(s) herewith declare that I am the sole inventor/we are the joint inventors and I/we have made a certain invention as set forth in a patent application (including industrial designs and utility models) entitled **PROCESS FOR MAKING FIBROUS STRUCTURES**, Attorney's Docket No. **10859P** and filed in the **United States** Patent Office as Number 60/959,885, on **July 17, 2007** (the hereinafter named assignee being authorized to insert said Number and filing date when ascertained):

Steven Lee Barnholtz of **5835 Olympia Fields Court, West Chester, OH 45069**;
Paul Dennis Trokhan of **1356 Warvel Road, Hamilton, OH 45013**;
Michael Donald Suer of **5470 Longlake Court, Cincinnati, OH 45247**;
Douglas Jay Barkey of **964 Airymeadows Drive, Maineville, OH 45039**;
Jonathan Paul Brennan of **4459 Hickory Nut Court, Cincinnati, OH 45241**;
Ronald Thomas Gorley of **7835 New Brunswick Drive, Cincinnati, OH 45241**;

I/We made said invention set forth in said patent application while employed by, or otherwise under an obligation to assign said invention to The Procter & Gamble Company or one of its Affiliates (including, Procter & Gamble Asia Pacific Ltd.; Procter & Gamble Australia Pty. Ltd.; Procter & Gamble Technology (Beijing) Co., Ltd.; Procter & Gamble Japan K.K.; Procter & Gamble Hong Kong Ltd.; Procter & Gamble India, Ltd.; Procter & Gamble Indonesia; Procter & Gamble Korea, Inc.; Procter & Gamble Malaysia Sdn. Bhd.; Procter & Gamble Philippines, Inc.; Procter & Gamble Taiwan Ltd; Procter & Gamble Manufacturing (Thailand) Ltd.; Procter & Gamble (Guangzhou) Ltd.; P&G Northeast Asia Pte Ltd; Max Factor K.K.; P&G K.K.; Procter & Gamble Asia Pte. Limited; Procter & Gamble de Mexico; Procter & Gamble de Venezuela, and P&G-Clairol, Inc.) and acknowledge my/our obligation at the time the invention was made to assign said invention to The Procter & Gamble Company or the Affiliate, respectively. Pursuant to said obligation and (in the case of employment by or obligation to the Affiliate) at the request of the Affiliate, I/we assign to The Procter & Gamble Company, its legal representatives, successors and assigns, the entire right, title and interest (including the right to claim priority of the filing date of said patent application under international conventions) in said invention as set forth in said patent application, and in all patents of the United States and of any other country which may be issued for said invention, as fully and completely as the same would have been held by me/us had this assignment not been made. The entire right, title and interest shall vest irrevocably in The Procter & Gamble Company. I/We further agree upon request, without additional compensation but at no expense to me/us, to execute or assent to applications, and to execute all other legal documents as may be necessary or desirable to vest the enjoyment of the rights assigned to The Procter & Gamble Company, its legal representatives, successors and assigns, or as said Company may direct.

I/We request the Commissioner of Patents and Trademarks to issue any Letters Patent of the United States which may be issued for said invention herein assigned and as set forth in U. S. Application Serial Number 12/170,575 (the hereinafter named assignee being authorized to insert said U.S. Serial Number when ascertained) to The Procter & Gamble Company, its legal representatives, successors or assigns, as the sole owner of the entire right, title, and interest in said patent and the invention and the invention covered thereby.

The ASSIGNMENT of said invention is effective as of the earlier of 1) the date of execution shown below or 2) the filing date of the first-filed of said patent application(s).

_____ _____
Steven Lee Barnholtz Date

State of Ohio }
} SS
County of Hamilton }

On this _____ day of _____, 2007, before me personally appeared Steven Lee Barnholtz , to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

_____
Notary Public/Witness

_____ _____
Paul Dennis Trokhan Date

State of Ohio }
} SS
County of Hamilton }

On this _____ day of _____, 2007, before me personally appeared Paul Dennis Trokhan, to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

_____
Notary Public/Witness

_____ _____
Michael Donald Suer Date

State of Ohio }
} SS
County of Hamilton }

On this _____ day of _____, 2007, before me personally appeared Michael Donald Suer , to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

_____
Notary Public/Witness

Douglas Jay Barkey

Date

State of Ohio }
} SS
County of Hamilton }

On this _____ day of _____, 2007, before me personally appeared Douglas Jay Barkey, to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

Notary Public/Witness

Jonathan Paul Brennan

8/20/07
Date

State of Ohio }
} SS
County of Butler }

On this 20 day of August, 2007, before me personally appeared Jonathan Paul Brennan, to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

NOTARY PUBLIC STATE OF OHIO

DONITA KONRAD
Notary Public, State of Ohio
My Commission Expires
May 9, 2010

Donita Konrad
Notary Public/Witness

Ronald Thomas Gorley

Date

State of Ohio }
} SS
County of }

On this _____ day of _____, 2007, before me personally appeared Ronald Thomas Gorley , to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

Notary Public/Witness

REVISED: 23 June 2006

GLOBAL GENERAL ASSIGNMENT

WHEREAS I/we, the undersigned inventor(s) herewith declare that I am the sole inventor/we are the joint inventors and I/we have made a certain invention as set forth in a patent application (including industrial designs and utility models) entitled **PROCESS FOR MAKING FIBROUS STRUCTURES**, Attorney's Docket No. **10859P** and filed in the **United States** Patent Office as Number 60/959,885, on **July 17, 2007** (the hereinafter named assignee being authorized to insert said Number and filing date when ascertained):

Steven Lee Barnholtz of **5835 Olympia Fields Court, West Chester, OH 45069**;
Paul Dennis Trokhan of **1356 Warvel Road, Hamilton, OH 45013**;
Michael Donald Suer of **5470 Longlake Court, Cincinnati, OH 45247**;
Douglas Jay Barkey of **964 Airymeadows Drive, Maineville, OH 45039**;
Jonathan Paul Brennan of **4459 Hickory Nut Court, Cincinnati, OH 45241**;
Ronald Thomas Gorley of **7835 New Brunswick Drive, Cincinnati, OH 45241**;

I/We made said invention set forth in said patent application while employed by, or otherwise under an obligation to assign said invention to The Procter & Gamble Company or one of its Affiliates (including, Procter & Gamble Asia Pacific Ltd.; Procter & Gamble Australia Pty. Ltd.; Procter & Gamble Technology (Beijing) Co., Ltd.; Procter & Gamble Japan K.K.; Procter & Gamble Hong Kong Ltd.; Procter & Gamble India, Ltd.; Procter & Gamble Indonesia; Procter & Gamble Korea, Inc.; Procter & Gamble Malaysia Sdn. Bhd.; Procter & Gamble Philippines, Inc.; Procter & Gamble Taiwan Ltd; Procter & Gamble Manufacturing (Thailand) Ltd.; Procter & Gamble (Guangzhou) Ltd.; P&G Northeast Asia Pte Ltd; Max Factor K.K.; P&G K.K.; Procter & Gamble Asia Pte. Limited; Procter & Gamble de Mexico; Procter & Gamble de Venezuela, and P&G-Clairol, Inc.) and acknowledge my/our obligation at the time the invention was made to assign said invention to The Procter & Gamble Company or the Affiliate, respectively. Pursuant to said obligation and (in the case of employment by or obligation to the Affiliate) at the request of the Affiliate, I/we assign to The Procter & Gamble Company, its legal representatives, successors and assigns, the entire right, title and interest (including the right to claim priority of the filing date of said patent application under international conventions) in said invention as set forth in said patent application, and in all patents of the United States and of any other country which may be issued for said invention, as fully and completely as the same would have been held by me/us had this assignment not been made. The entire right, title and interest shall vest irrevocably in The Procter & Gamble Company. I/We further agree upon request, without additional compensation but at no expense to me/us, to execute or assent to applications, and to execute all other legal documents as may be necessary or desirable to vest the enjoyment of the rights assigned to The Procter & Gamble Company, its legal representatives, successors and assigns, or as said Company may direct.

I/We request the Commissioner of Patents and Trademarks to issue any Letters Patent of the United States which may be issued for said invention herein assigned and as set forth in U. S. Application Serial Number 12/170,575 (the hereinafter named assignee being authorized to insert said U.S. Serial Number when ascertained) to The Procter & Gamble Company, its legal representatives, successors or assigns, as the sole owner of the entire right, title, and interest in said patent and the invention and the invention covered thereby.

The ASSIGNMENT of said invention is effective as of the earlier of 1) the date of execution shown below or 2) the filing date of the first-filed of said patent application(s).

_____ _____
Steven Lee Barnholtz Date

State of Ohio }
} SS
County of Hamilton }

On this _____ day of _____, 2007, before me personally appeared Steven Lee Barnholtz , to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

_____
Notary Public/Witness

_____ _____
Paul Dennis Trokhan Date

State of Ohio }
} SS
County of Hamilton }

On this _____ day of _____, 2007, before me personally appeared Paul Dennis Trokhan, to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

_____
Notary Public/Witness

_____ _____
Michael Donald Suer Date

State of Ohio }
} SS
County of Hamilton }

On this _____ day of _____, 2007, before me personally appeared Michael Donald Suer , to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

_____
Notary Public/Witness

Douglas Jay Barkey

Date

State of Ohio }
} SS
County of Hamilton }

On this _____ day of _____, 2007, before me personally appeared Douglas Jay Barkey, to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

Notary Public/Witness

Jonathan Paul Brennan

Date

State of Ohio }
} SS
County of }

On this _____ day of _____, 2007, before me personally appeared Jonathan Paul Brennan, to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

Notary Public/Witness

Ronald Thomas Gorley

20-7-2007
Date

State of Ohio }
} SS
County of Warren }

On this 20 day of July, 2007, before me personally appeared Ronald Thomas Gorley , to me known to be the person named in and who executed the above instrument, and acknowledged to me that he executed the same for the uses and purposes therein set forth.

NOTARY PUBLIC STATE OF OHIO

LINDA S. JERNIGAN
Notary Public, State of Ohio
My Commission Expires
October 26, 2008

Notary Public/Witness

REVISED: 23 June 2006

PROCESS FOR MAKING FIBROUS STRUCTURES

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application No. 60/959,885, filed July 17, 2007.

FIELD OF THE INVENTION

The present invention relates to processes for making fibrous structures and more particularly to processes for making fibrous structures comprising filaments.

BACKGROUND OF THE INVENTION

Processes for making fibrous structures comprising filaments are known in the art. An example of such a known process is a co-form process.

Known co-form processes utilize a knife-edge die that comprises filament-forming holes. The filaments produced by the filament-forming holes are contacted after exiting by air. The air contacts the filaments at an angle of 30° to less than 90°, not parallel to or substantially parallel to the filament produced from the filament-forming holes.

The problem with current processes for making fibrous structures, especially processes that utilize knife-edge dies, is that the fibrous structures comprise filaments having a distribution of average filament diameters that does not optimize the properties, for example absorbency properties (such as absorption capacity and/or rate of absorption) of the fibrous structures.

Accordingly, there is a need for a process for making fibrous structures, especially fibrous structure that comprise filaments, that provide improved properties compared to fibrous structures produced by known processes for making fibrous structures, especially processes that utilize knife-edge dies.

SUMMARY OF THE INVENTION

The present invention solves the problem identified above by providing a process for making fibrous structures, especially fibrous structure that comprise filaments, that exhibit improved properties compared to fibrous structure produced by known processes for making fibrous structures, especially processes that utilize knife-edge dies.

In one example of the present invention, a process for making a fibrous structure, the process comprising the steps of:

a. providing a die comprising one or more filament-forming holes, wherein one or more fluid-releasing holes are associated with one filament-forming hole such that a fluid exiting the fluid-releasing hole is parallel or substantially parallel to an exterior surface of a filament exiting the filament-forming hole;

b. supplying at least a first polymer to the die;

c. producing a plurality of filaments comprising the first polymer from the die;

d. combining the filaments with solid additives to form a mixture; and

e. collecting the mixture on a collection device to produce a fibrous structure;

is provided.

In another example of the present invention, a process for making a fibrous structure, the process comprising the steps of:

a. providing a die comprising one or more filament-forming holes, wherein one or more fluid-releasing holes are associated with one filament-forming hole such that a fluid exiting the fluid-releasing hole is parallel or substantially parallel to an exterior surface of a filament exiting the filament-forming hole;

b. supplying a polyolefin polymer to the die;

c. producing a plurality of filaments comprising the polyolefin polymer from the die;

d. combining the filaments with wood pulp fibers to form a mixture; and

e. collecting the mixture on a collection device to produce a fibrous structure;

is provided.

In yet another example of the present invention, a fibrous structure made by a process according to the present invention is provided.

Accordingly, the present invention provides a process for making fibrous structures, especially fibrous structure that comprise filaments, that exhibit improved properties compared to fibrous structure produced by known processes for making fibrous structures, especially processes that utilize knife-edge dies.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a Pore Volume Distribution graph of various fibrous structures, including a fibrous structure according to the present invention, showing the Ending Pore Radius of from 1μm to 1000μm and the Capacity of Water in Pores;

Fig. 2 is a Pore Volume Distribution graph of various fibrous structures, including a fibrous structure according to the present invention, showing the Ending Pore Radius of from 1μm to 300μm and the Capacity of Water in Pores;

Fig. 3 is a schematic representation of an example of a fibrous structure according to the present invention;

Fig. 4 is a schematic, cross-sectional representation of Fig. 3 taken along line 4-4;

Fig. 5 is a schematic representation of another example of a fibrous structure according to the present invention;

Fig. 6 is a schematic, cross-sectional representation of another example of a fibrous structure according to the present invention;

Fig. 7 is a schematic, cross-sectional representation of another example of a fibrous structure according to the present invention;

Fig. 8 is a schematic representation of another example of a fibrous structure in roll form according to the present invention;

Fig. 9 is a schematic representation of another example of a fibrous structure;

Fig. 10 is a schematic representation of an example of a process for making a fibrous structure according to the present invention;

Fig. 11 is a schematic representation of an example of a filament-forming hole and fluid-releasing hole from a suitable die useful in making a fibrous structure according to the present invention;

Fig. 12 is a scanning electromicrograph of a fibrous structure made by a known die;

Fig. 13 is a scanning electromicrograph of a fibrous structure made by a die according to the present invention;

Fig. 14 is a schematic representation of an example of a solid additive spreader useful in the processes of the present invention;

Fig. 15 is a schematic representation of another example of a solid additive spreader useful in the processes of the present invention;

Fig. 16 is a diagram of a support rack utilized in the HFS and VFS Test Methods described herein;

Fig. 17 is a diagram of a support rack cover utilized in the HFS and VFS Test Methods described herein.

DETAILED DESCRIPTION OF THE INVENTION

Definitions

"Fibrous structure" as used herein means a structure that comprises one or more filaments and/or fibers. In one example, a fibrous structure according to the present invention means an orderly arrangement of filaments and/or fibers within a structure in order to perform a function. Nonlimiting examples of fibrous structures of the present invention include paper, fabrics (including woven, knitted, and non-woven), and absorbent pads (for example for diapers or feminine hygiene products).

Nonlimiting examples of processes for making fibrous structures include known wet-laid papermaking processes and air-laid papermaking processes. Such processes typically include steps of preparing a fiber composition in the form of a suspension in a medium, either wet, more specifically aqueous medium, or dry, more specifically gaseous, i.e. with air as medium. The aqueous medium used for wet-laid processes is oftentimes referred to as a fiber slurry. The fibrous slurry is then used to deposit a plurality of fibers onto a forming wire or belt such that an embryonic fibrous structure is formed, after which drying and/or bonding the fibers together results in a fibrous structure. Further processing the fibrous structure may be carried out such that a finished fibrous structure is formed. For example, in typical papermaking processes, the finished fibrous structure is the fibrous structure that is wound on the reel at the end of papermaking, and may subsequently be converted into a finished product, e.g. a sanitary tissue product.

The fibrous structures of the present invention may be homogeneous or may be layered. If layered, the fibrous structures may comprise at least two and/or at least three and/or at least four and/or at least five layers.

The fibrous structures of the present invention may be co-formed fibrous structures.

"Co-formed fibrous structure" as used herein means that the fibrous structure comprises a mixture of at least two different materials wherein at least one of the materials comprises a filament, such as a polypropylene filament, and at least one other material, different from the first material, comprises a solid additive, such as a fiber and/or a particulate. In one example, a co-formed fibrous structure comprises solid additives, such as fibers, such as wood pulp fibers, and filaments, such as polypropylene filaments.

"Solid additive" as used herein means a fiber and/or a particulate.

"Particulate" as used herein means a granular substance or powder.

"Fiber" and/or "Filament" as used herein means an elongate particulate having an apparent length greatly exceeding its apparent width, i.e. a length to diameter ratio of at least about 10. For purposes of the present invention, a "fiber" is an elongate particulate as described above that exhibits a length of less than 5.08 cm (2 in.) and a "filament" is an elongate particulate as described above that exhibits a length of greater than or equal to 5.08 cm (2 in.).

Fibers are typically considered discontinuous in nature. Nonlimiting examples of fibers include wood pulp fibers and synthetic staple fibers such as polyester fibers.

Filaments are typically considered continuous or substantially continuous in nature. Filaments are relatively longer than fibers. Nonlimiting examples of filaments include meltblown and/or spunbond filaments. Nonlimiting examples of materials that can be spun into filaments include natural polymers, such as starch, starch derivatives, cellulose and cellulose derivatives, hemicellulose, hemicellulose derivatives, and synthetic polymers including, but not limited to polyvinyl alcohol filaments and/or polyvinyl alcohol derivative filaments, and thermoplastic polymer filaments, such as polyesters, nylons, polyolefins such as polypropylene filaments, polyethylene filaments, and biodegradable or compostable thermoplastic fibers such as polylactic acid filaments, polyhydroxyalkanoate filaments and polycaprolactone filaments. The filaments may be monocomponent or multicomponent, such as bicomponent filaments.

In one example of the present invention, "fiber" refers to papermaking fibers. Papermaking fibers useful in the present invention include cellulosic fibers commonly known as wood pulp fibers. Applicable wood pulps include chemical pulps, such as Kraft, sulfite, and sulfate pulps, as well as mechanical pulps including, for example, groundwood, thermomechanical pulp and chemically modified thermomechanical pulp. Chemical pulps, however, may be preferred since they impart a superior tactile sense of softness to tissue sheets made therefrom. Pulps derived from both deciduous trees (hereinafter, also referred to as "hardwood") and coniferous trees (hereinafter, also referred to as "softwood") may be utilized. The hardwood and softwood fibers can be blended, or alternatively, can be deposited in layers to provide a stratified web. U.S. Pat. No. 4,300,981 and U.S. Pat. No. 3,994,771 are incorporated herein by reference for the purpose of disclosing layering of hardwood and softwood fibers. Also applicable to the present invention are fibers derived from recycled paper, which may contain any or all of the above categories as well as other non-fibrous materials such as fillers and adhesives used to facilitate the original papermaking.

In addition to the various wood pulp fibers, other cellulosic fibers such as cotton linters, rayon, lyocell and bagasse can be used in this invention. Other sources of cellulose in the form of fibers or capable of being spun into fibers include grasses and grain sources.

"Sanitary tissue product" as used herein means a soft, low density (i.e. < about 0.15 g/cm3) web useful as a wiping implement for post-urinary and post-bowel movement cleaning (toilet tissue), for otorhinolaryngological discharges (facial tissue), and multi-functional absorbent and cleaning uses (absorbent towels). The sanitary tissue product may be convolutedly wound upon itself about a core or without a core to form a sanitary tissue product roll.

In one example, the sanitary tissue product of the present invention comprises a fibrous structure according to the present invention.

The sanitary tissue products of the present invention may exhibit a basis weight between about 10 g/m^2 to about 120 g/m^2 and/or from about 15 g/m^2 to about 110 g/m^2 and/or from about 20 g/m^2 to about 100 g/m^2 and/or from about 30 to 90 g/m^2. In addition, the sanitary tissue product of the present invention may exhibit a basis weight between about 40 g/m^2 to about 120 g/m^2 and/or from about 50 g/m^2 to about 110 g/m^2 and/or from about 55 g/m^2 to about 105 g/m^2 and/or from about 60 to 100 g/m^2.

The sanitary tissue products of the present invention may exhibit a total dry tensile strength of greater than about 59 g/cm (150 g/in) and/or from about 78 g/cm (200 g/in) to about 394 g/cm (1000 g/in) and/or from about 98 g/cm (250 g/in) to about 335 g/cm (850 g/in). In addition, the sanitary tissue product of the present invention may exhibit a total dry tensile strength of greater than about 196 g/cm (500 g/in) and/or from about 196 g/cm (500 g/in) to about 394 g/cm (1000 g/in) and/or from about 216 g/cm (550 g/in) to about 335 g/cm (850 g/in) and/or from about 236 g/cm (600 g/in) to about 315 g/cm (800 g/in). In one example, the sanitary tissue product exhibits a total dry tensile strength of less than about 394 g/cm (1000 g/in) and/or less than about 335 g/cm (850 g/in).

In another example, the sanitary tissue products of the present invention may exhibit a total dry tensile strength of greater than about 196 g/cm (500 g/in) and/or greater than about 236 g/cm (600 g/in) and/or greater than about 276 g/cm (700 g/in) and/or greater than about 315 g/cm (800 g/in) and/or greater than about 354 g/cm (900 g/in) and/or greater than about 394 g/cm (1000 g/in) and/or from about 315 g/cm (800 g/in) to about 1968 g/cm (5000 g/in) and/or from about 354 g/cm (900 g/in) to about 1181 g/cm (3000 g/in) and/or from about 354 g/cm (900 g/in) to about 984 g/cm (2500 g/in) and/or from about 394 g/cm (1000 g/in) to about 787 g/cm (2000 g/in).

The sanitary tissue products of the present invention may exhibit an initial total wet tensile strength of less than about 78 g/cm (200 g/in) and/or less than about 59 g/cm (150 g/in) and/or less than about 39 g/cm (100 g/in) and/or less than about 29 g/cm (75 g/in).

The sanitary tissue products of the present invention may exhibit an initial total wet tensile strength of greater than about 118 g/cm (300 g/in) and/or greater than about 157 g/cm (400 g/in) and/or greater than about 196 g/cm (500 g/in) and/or greater than about 236 g/cm (600 g/in) and/or greater than about 276 g/cm (700 g/in) and/or greater than about 315 g/cm (800 g/in) and/or greater than about 354 g/cm (900 g/in) and/or greater than about 394 g/cm (1000 g/in) and/or from about 118 g/cm (300 g/in) to about 1968 g/cm (5000 g/in) and/or from about 157 g/cm (400 g/in) to about 1181 g/cm (3000 g/in) and/or from about 196 g/cm (500 g/in) to about 984 g/cm (2500 g/in) and/or from about 196 g/cm (500 g/in) to about 787 g/cm (2000 g/in) and/or from about 196 g/cm (500 g/in) to about 591 g/cm (1500 g/in).

The sanitary tissue products of the present invention may exhibit a density (measured at 95 g/in^2) of less than about 0.60 g/cm^3 and/or less than about 0.30 g/cm^3 and/or less than about 0.20 g/cm^3 and/or less than about 0.10 g/cm^3 and/or less than about 0.07 g/cm^3 and/or less than about 0.05 g/cm^3 and/or from about 0.01 g/cm^3 to about 0.20 g/cm^3 and/or from about 0.02 g/cm^3 to about 0.10 g/cm^3.

The sanitary tissue products of the present invention may exhibit a total absorptive capacity of according to the Horizontal Full Sheet (HFS) Test Method described herein of greater than about 10 g/g and/or greater than about 12 g/g and/or greater than about 15 g/g and/or from about 15 g/g to about 50 g/g and/or to about 40 g/g and/or to about 30 g/g.

The sanitary tissue products of the present invention may exhibit a Vertical Full Sheet (VFS) value as determined by the Vertical Full Sheet (VFS) Test Method described herein of greater than about 5 g/g and/or greater than about 7 g/g and/or greater than about 9 g/g and/or from about 9 g/g to about 30 g/g and/or to about 25 g/g and/or to about 20 g/g and/or to about 17 g/g.

The sanitary tissue products of the present invention may be in the form of sanitary tissue product rolls. Such sanitary tissue product rolls may comprise a plurality of connected, but perforated sheets of fibrous structure, that are separably dispensable from adjacent sheets. In one example, one or more ends of the roll of sanitary tissue product may comprise an adhesive and/or dry strength agent to mitigate the loss of fibers, especially wood pulp fibers from the ends of the roll of sanitary tissue product.

The sanitary tissue products of the present invention may comprises additives such as softening agents, temporary wet strength agents, permanent wet strength agents, bulk softening agents, lotions, silicones, wetting agents, latexes, especially surface-pattern-applied latexes, dry strength agents such as carboxymethylcellulose and starch, and other types of additives suitable for inclusion in and/or on sanitary tissue products.

"Weight average molecular weight" as used herein means the weight average molecular weight as determined using gel permeation chromatography according to the protocol found in Colloids and Surfaces A. Physico Chemical & Engineering Aspects, Vol. 162, 2000, pg. 107-121.

"Basis Weight" as used herein is the weight per unit area of a sample reported in lbs/3000 ft^2 or g/m^2.

"Machine Direction" or "MD" as used herein means the direction parallel to the flow of the fibrous structure through the fibrous structure making machine and/or sanitary tissue product manufacturing equipment.

"Cross Machine Direction" or "CD" as used herein means the direction parallel to the width of the fibrous structure making machine and/or sanitary tissue product manufacturing equipment and perpendicular to the machine direction.

"Ply" as used herein means an individual, integral fibrous structure.

"Plies" as used herein means two or more individual, integral fibrous structures disposed in a substantially contiguous, face-to-face relationship with one another, forming a multi-ply fibrous structure and/or multi-ply sanitary tissue product. It is also contemplated that an individual, integral fibrous structure can effectively form a multi-ply fibrous structure, for example, by being folded on itself.

"Total Pore Volume" as used herein means the sum of the fluid holding void volume in each pore range from 1μm to 1000μm radii as measured according to the Pore Volume Test Method described herein.

"Pore Volume Distribution" as used herein means the distribution of fluid holding void volume as a function of pore radius. The Pore Volume Distribution of a fibrous structure is measured according to the Pore Volume Test Method described herein.

As used herein, the articles "a" and "an" when used herein, for example, "an anionic surfactant" or "a fiber" is understood to mean one or more of the material that is claimed or described.

All percentages and ratios are calculated by weight unless otherwise indicated. All percentages and ratios are calculated based on the total composition unless otherwise indicated.

Unless otherwise noted, all component or composition levels are in reference to the active level of that component or composition, and are exclusive of impurities, for example, residual solvents or by-products, which may be present in commercially available sources.

Fibrous Structure

It has surprisingly been found that the fibrous structures of the present invention exhibit a pore volume distribution unlike pore volume distributions of other known fibrous structures.

The fibrous structures of the present invention may comprise a plurality of filaments, a plurality of solid additives, such as fibers, and a mixture of filaments and solid additives.

As shown in Figs. 1 and 2, examples of fibrous structures according to the present invention as represented by plots A and B exhibit a pore volume distribution such that greater than about 40% of the total pore volume present in the fibrous structure exists in pores of radii of from about 121μm to about 200μm and/or greater than about 50% of the total pore volume present in the fibrous structure exists in pores of radii of from about 101μm to about 200μm. The ranges of 101μm to 200μm and 121μm to 200μm are explicitly identified on the graph of Fig. 2. It should be noted that the value for the ending pore radius for the range of 101μm to 120μm is plotted at the ending pore radius; namely, 120μm. A similar result is shown on Fig. 2 for the value for the ending pore radius for the range of 121μm to 140μm, where the value is plotted at the ending pore radius; namely, 140μm. This data is also supported by the values present in Table 1 below.

Such fibrous structures have been found to exhibit consumer-recognizable beneficial absorbent capacity. In one example, the fibrous structures comprise a plurality of solid additives, for example fibers. In another example, the fibrous structures comprise a plurality of filaments. In yet another example, the fibrous structures comprise a mixture of filaments and solid additives, such as fibers.

As shown in Fig. 2, the examples of fibrous structures according to the present invention as represented by plots A and B may exhibit a bi-modal pore volume distribution such that the fibrous structure exhibits a pore volume distribution such that the greater than about 40% of the total pore volume present in the fibrous structure exists in pores of radii of from about 121μm to about 200μm and greater than about 2% and/or greater than about 5% and/or greater than about 10% of the total pore volume present in the fibrous structure exists in pores of radii of less than

about 100μm and/or less than about 80μm and/or less than about 50μm and/or from about 1μm to about 100μm and/or from about 5μm to about 75μm and/or 10μm to about 50μm.

A fibrous structure according to the present invention exhibiting a bi-modal pore volume distribution as described above provides beneficial absorbent capacity and absorbent rate as a result of the larger radii pores and beneficial surface drying as a result of the smaller radii pores.

Figs. 3 and 4 show schematic representations of an example of a fibrous structure in accordance with the present invention. As shown in Figs. 3 and 4, the fibrous structure 10 may be a co-formed fibrous structure. The fibrous structure 10 comprises a plurality of filaments 12, such as polypropylene fibers, and a plurality of solid additives, such as wood pulp fibers 14. The filaments 12 may be randomly arranged as a result of the process by which they are spun and/or formed into the fibrous structure 10. The wood pulp fibers 14, may be randomly dispersed throughout the fibrous structure 10 in the x-y plane. The wood pulp fibers 14 may be non-randomly dispersed throughout the fibrous structure in the z-direction. In one example (not shown), the wood pulp fibers 14 are present at a higher concentration on one or more of the exterior, x-y plane surfaces than within the fibrous structure along the z-direction.

As shown in Fig. 5, another example of a fibrous structure in accordance with the present invention is a layered fibrous structure 10'. The layered fibrous structure 10' comprises a first layer 16 comprising a plurality of filaments 12, such as polypropylene filaments, and a plurality of solid additives, in this example wood pulp fibers 14. The layered fibrous structure 10' further comprises a second layer 18 comprising a plurality of filaments 20, such as polypropylene filaments. In one example, the first and second layers 16, 18, respectively, are sharply defined zones of concentration of the filaments and/or solid additives. The plurality of filaments 20 may be deposited directly onto a surface of the first layer 16 to form a layered fibrous structure that comprises the first and second layers 16, 18, respectively.

Further, the layered fibrous structure 10' may comprise a third layer 22, as shown in Fig. 5. The third layer 22 may comprise a plurality of filaments 24, which may be the same or different from the filaments 20 in the second and/or first layers 18, 16. As a result of the addition of the third layer 22, the first layer 16 is positioned, for example sandwiched, between the second layer 18 and the third layer 22. The plurality of filaments 24 may be deposited directly onto a surface of the first layer 16, opposite from the second layer, to form the layered fibrous structure 10' that comprises the first, second and third layers 16, 18, 22, respectively.

As shown in Fig. 6, a cross-sectional schematic representation of another example of a fibrous structure in accordance with the present invention comprising a layered fibrous structure

10" is provided. The layered fibrous structure 10" comprises a first layer 26, a second layer 28 and optionally a third layer 30. The first layer 26 comprises a plurality of filaments 12, such as polypropylene filaments, and a plurality of solid additives, such as wood pulp fibers 14. The second layer 28 may comprise any suitable filaments, solid additives and/or polymeric films. In one example, the second layer 28 comprises a plurality of filaments 34. In one example, the filaments 34 comprise a polymer selected from the group consisting of: polysaccharides, polysaccharide derivatives, polyvinylalcohol, polyvinylalcohol derivatives and mixtures thereof.

In another example of a fibrous structure in accordance with the present invention, instead of being layers of fibrous structure 10", the material forming layers 26, 28 and 30, may be in the form of plies wherein two or more of the plies may be combined to form a fibrous structure. The plies may be bonded together, such as by thermal bonding and/or adhesive bonding, to form a multi-ply fibrous structure.

Another example of a fibrous structure of the present invention in accordance with the present invention is shown in Fig. 7. The fibrous structure 10"' may comprise two or more plies, wherein one ply 36 comprises any suitable fibrous structure in accordance with the present invention, for example fibrous structure 10 as shown and described in Figs. 3 and 4 and another ply 38 comprising any suitable fibrous structure, for example a fibrous structure comprising filaments 40, such as polypropylene filaments. The fibrous structure of ply 38 may be in the form of a net and/or mesh and/or other structure that comprises pores that expose one or more portions of the fibrous structure 10 to an external environment and/or at least to liquids that may come into contact, at least initially, with the fibrous structure of ply 38. In addition to ply 38, the fibrous structure 10"' may further comprise ply 42. Ply 42 may comprise a fibrous structure comprising filaments 44, such as polypropylene filaments, and may be the same or different from the fibrous structure of ply 38.

Two or more of the plies 36, 38 and 42 may be bonded together, such as by thermal bonding and/or adhesive bonding, to form a multi-ply fibrous structure. After a bonding operation, especially a thermal bonding operation, it may be difficult to distinguish the plies of the fibrous structure 10"' and the fibrous structure 10"' may visually and/or physically be a similar to a layered fibrous structure in that one would have difficulty separating the once individual plies from each other. In one example, ply 36 may comprise a fibrous structure that exhibits a basis weight of at least about 15 g/m^2 and/or at least about 20 g/m^2 and/or at least about 25 g/m^2 and/or at least about 30 g/m^2 up to about 120 g/m^2 and/or 100 g/m^2 and/or 80 g/m^2 and/or 60 g/m^2 and the plies 38 and 42, when present, independently and individually, may

comprise fibrous structures that exhibit basis weights of less than about 10 g/m^2 and/or less than about 7 g/m^2 and/or less than about 5 g/m^2 and/or less than about 3 g/m^2 and/or less than about 2 g/m^2 and/or to about 0 g/m^2 and/or 0.5 g/m^2.

Plies 38 and 42, when present, may help retain the solid additives, in this case the wood pulp fibers 14, on and/or within the fibrous structure of ply 36 thus reducing lint and/or dust (as compared to a single-ply fibrous structure comprising the fibrous structure of ply 36 without the plies 38 and 42) resulting from the wood pulp fibers 14 becoming free from the fibrous structure of ply 36.

The fibrous structures of the present invention may comprise any suitable amount of filaments and any suitable amount of solid additives. For example, the fibrous structures may comprise from about 10% to about 70% and/or from about 20% to about 60% and/or from about 30% to about 50% by dry weight of the fibrous structure of filaments and from about 90% to about 30% and/or from about 80% to about 40% and/or from about 70% to about 50% by dry weight of the fibrous structure of solid additives, such as wood pulp fibers.

The filaments and solid additives of the present invention may be present in fibrous structures according to the present invention at weight ratios of filaments to solid additives of from at least about 1:1 and/or at least about 1:1.5 and/or at least about 1:2 and/or at least about 1:2.5 and/or at least about 1:3 and/or at least about 1:4 and/or at least about 1:5 and/or at least about 1:7 and/or at least about 1:10.

The fibrous structures of the present invention and/or any sanitary tissue products comprising such fibrous structures may be subjected to any post-processing operations such as embossing operations, printing operations, tuft-generating operations, thermal bonding operations, ultrasonic bonding operations, perforating operations, surface treatment operations such as application of lotions, silicones and/or other materials and mixtures thereof.

Any hydrophobic or non-hydrophilic materials within the fibrous structure, such as polypropylene filaments, may be surface treated and/or melt treated with a hydrophilic modifier. Nonlimiting examples of surface treating hydrophilic modifiers include surfactants, such as Triton X-100. Nonlimiting examples of melt treating hydrophilic modifiers that are added to the melt, such as the polypropylene melt, prior to spinning filaments, include hydrophilic modifying melt additives such as VW351 commercially available from Polyvel, Inc. and Irgasurf commercially available from Ciba. The hydrophilic modifier may be associated with the hydrophobic or non-hydrophilic material at any suitable level known in the art. In one example, the hydrophilic modifier is associated with the hydrophobic or non-hydrophilic material at a level

of less than about 20% and/or less than about 15% and/or less than about 10% and/or less than about 5% and/or less than about 3% to about 0% by dry weight of the hydrophobic or non-hydrophilic material.

The fibrous structures of the present invention may include optional additives, each, when present, at individual levels of from about 0% and/or from about 0.01% and/or from about 0.1% and/or from about 1% and/or from about 2% to about 95% and/or to about 80% and/or to about 50% and/or to about 30% and/or to about 20% by dry weight of the fibrous structure. Nonlimiting examples of optional additives include permanent wet strength agents, temporary wet strength agents, dry strength agents such as carboxymethylcellulose and/or starch, softening agents, lint reducing agents, opacity increasing agents, wetting agents, odor absorbing agents, perfumes, temperature indicating agents, color agents, dyes, osmotic materials, microbial growth detection agents, antibacterial agents and mixtures thereof.

The fibrous structure of the present invention may itself be a sanitary tissue product. It may be convolutedly wound about a core to form a roll. It may be combined with one or more other fibrous structures as a ply to form a multi-ply sanitary tissue product. In one example, a co-formed fibrous structure of the present invention may be convolutedly wound about a core to form a roll of co-formed sanitary tissue product. The rolls of sanitary tissue products may also be coreless.

As shown in Fig. 8, a fibrous structure roll 46 comprising a fibrous structure, such as a fibrous structure according to the present invention, comprises end edges 48, 50. At least one of the end edges 48, 50 comprises a bond region 52. The bond region 52 may comprise a plurality of bond subregions (not shown) that are present at a frequency of at least about 10 and/or at least about 50 and/or at least about 100 and/or at least about 200 per inch, such as dots per inch (dpi). In one example, the bond region 52 may cover the entire or substantially the entire surface area of the end edge 48. In one example, the bond region 52 comprises greater than about 20% and/or greater than about 25% and/or greater than about 30% and/or greater than about 50% of the total surface area of the end edge 48. In one example, the bond region 52 is a film that comprises the entire or substantially entire total surface area of the end edge 48. In another example, the bond region 52 is present on a non-lotioned fibrous structure.

The bond region 52 may comprise a bonding agent selected from chemical agents and/or mechanical agents. Nonlimiting examples of chemical agents include dry strength agents and wet strength agents and mixtures thereof. The mechanical agents may be in the form of a liquid

and/or a solid. A liquid mechanical agent may be an oil. A solid mechanical agent may be a wax.

The bond region 52 may comprise different types of bonding agents and/or bonding agents that are chemically different from the filaments and/or fibers present in the fibrous structure. In one example, the material comprises a bonding agent, such as a dry strength resin such as a polysaccharide and/or a polysaccharide derivative and temporary and permanent wet strength resins. Nonlimiting examples of suitable bonding agents include latex dispersions, polyvinyl alcohol, Parez®, Kymene®, carboxymethylcellulose and starch.

As shown in Fig. 9, a fibrous structure 54 in accordance with the present invention may comprise edges 56, 58, 60, 62. One or more of the edges 56, 58, 60, 62 may comprise a bond region 64. The bond region 64 may extend inwardly from the edge 56, for example less than about 1 cm and/or less than about 0.5 cm. Any of the edges may comprise such a bond region. The bond region 64 may comprise a plurality of bond subregions (not shown) that are present at a frequency of at least 10 and/or at least 50 and/or at least 100 and/or at least 200 per inch, such as dots per inch (dpi). The bond region 64 may comprise a material chemically different from the filaments and/or fibers present in the fibrous structure. In one example, the material comprises a bonding agent, such as a dry strength resin such as a polysaccharide and/or a polysaccharide derivative. Nonlimiting examples of suitable bonding agents include carboxymethylcellulose and starch

To further illustrate the fibrous structures of the present invention, Table 1 sets forth the average pore volume distributions of known and/or commercially available fibrous structures and a fibrous structure in accordance with the present invention.

Table 1

Pore Radius (μm)	Huggies®	Huggies® Wash Cloth	Duramax	Concert EBT.055.1010 TBAL	LBAL-DUNI embossed	Bounty®	Invention Example A	Invention Example B
1	0	0	0	0	0	0	0	0
2.5	19.25	29.6	32.4	33.65	34.4	31.1	19.55	15.85
5	11.65	16.1	17.85	18.1	18.25	17.6	12.4	7.95
10	11.7	12.6	28.5	14.4	14.75	32.8	10.35	6.45
15	7.95	7.05	101.7	8.65	8.5	52.3	6.45	3.2
20	7.15	4.65	62.7	6.45	6.4	36.7	3.8	2.45
30	31.35	6.45	91.55	9.1	9.55	54	7.1	3.65
40	110.4	5.5	82.1	26.3	127.25	47.8	6.4	3.4
50	133.05	6.5	77.35	65.95	71.4	43.6	6.5	4.6

60	200.1	96.55	70.5	74.7	59.95	38.9	7.5	6.55
70	302.45	144.85	61.65	70.25	69.05	36.3	13.85	11.3
80	336.9	132.35	56.05	102.05	95.05	33.9	150.85	63.15
90	250.9	150.8	49.3	174.05	150.1	33	137.5	128
100	160.15	162.8	48.3	293	232.9	32.2	143.35	129.25
120	172.8	394.1	95.6	693.4	464.15	64.7	359.75	306.05
140	85.1	451.7	89.5	162.55	176.45	68.5	578.8	521.95
160	54	505.45	76.6	19.35	49.6	74.8	485.85	613.35
180	37.3	509.7	63.45	10.15	24.3	78.5	257.65	243.3
200	30.15	450.95	50	8.2	18.55	89.2	108.7	69.15
225	28.2	409.15	51.6	8.5	18.95	134.4	56.15	32.55
250	22.85	245.2	44	7.5	16.25	149.8	32.3	20.6
275	22.15	144.1	40.25	2.7	14.9	157.9	22.75	13.75
300	18.4	101.3	35.95	10.05	13.75	125.7	24.6	7.9
350	29.95	153.2	60.7	10.9	25.4	145	41.95	24.45
400	24.25	141.7	59.25	9.65	26.65	52.4	40.55	17.55
500	45.6	271.15	266.45	15.75	116.85	56	51.45	31.05
600	34.3	230.95	291.9	14.5	71.3	23.9	33.45	27.95
800	46.65	261.6	162.4	24.3	34.25	34.9	45.35	32.6
1000	38.75	112.55	29.15	24.9	30.35	24.9	34.6	25.55
Total	2273.45	5158.6	2196.75	1919.05	1999.25	1770.8	2699.5	2373.55
101-200 µm	16.7%	44.8%	17.1%	46.6%	36.7%	21.2%	66.3%	73.9%
121-200 µm	9.1%	37.2%	12.7%	10.4%	13.5%	17.6%	53.0%	61.0%

The fibrous structures of the present invention may exhibit a unique combination of fibrous structure properties that do not exist in known fibrous structures. For example, the fibrous structures may exhibit a VFS of greater than about 11 g/g and/or greater than about 12 g/g and/or greater than about 13 g/g and/or greater than about 14 g/g and/or less than about 50 g/g and/or less than about 40 g/g and/or less than about 30 g/g and/or less than about 20 g/g and/or from about 11 g/g to about 50 g/g and/or from about 11 g/g to about 40 g/g and/or from about 11 g/g to about 30 g/g and/or from about 11 g/g to about 20 g/g.

In addition to the VFS property, the fibrous structures of the present invention may exhibit a Dry CD Tensile Modulus of less than about 1500 g/cm and/or less than about 1400 g/cm and/or less than about 1300 g/cm and/or less than about 1100 g/cm and/or less than about 1000 g/cm and/or less than about 800 g/cm and/or greater than about 50 g/cm and/or greater than about 100 g/cm and/or greater than about 300 g/cm and/or from about 50 g/cm to about 1500

g/cm and/or from about 100 g/cm to about 1400 g/cm and/or from about 100 g/cm to about 1300 g/cm.

In addition to the VFS property and/or the Dry CD Tensile Modulus property, the fibrous structures of the present invention may exhibit a Wet CD TEA of greater than about 35 $(g \cdot in)/in^2$ and/or greater than about 50 $(g \cdot in)/in^2$ and/or greater than about 75 $(g \cdot in)/in^2$ and/or greater than about 90 $(g \cdot in)/in^2$ and/or greater than about 150 $(g \cdot in)/in^2$ and/or greater than about 175 $(g \cdot in)/in^2$ and/or less than about 500 $(g \cdot in)/in^2$ and/or less than about 400 $(g \cdot in)/in^2$ and/or less than about 350 $(g \cdot in)/in^2$ and/or less than about 300 $(g \cdot in)/in^2$ and/or from about 35 $(g \cdot in)/in^2$ to about 500 $(g \cdot in)/in^2$ and/or from about 35 $(g \cdot in)/in^2$ to about 400 $(g \cdot in)/in^2$ and/or from about 50 $(g \cdot in)/in^2$ to about 350 $(g \cdot in)/in^2$ and/or from about 75 $(g \cdot in)/in^2$ to about 300 $(g \cdot in)/in^2$.

In addition to the VFS property and/or the Dry CD Tensile Modulus property and/or the Wet CD TEA, the fibrous structures of the present invention may exhibit a Wet MD TEA of greater than about 40 $(g \cdot in)/in^2$ and/or greater than about 50 $(g \cdot in)/in^2$ and/or greater than about 75 $(g \cdot in)/in^2$ and/or greater than about 90 $(g \cdot in)/in^2$ and/or greater than about 150 $(g \cdot in)/in^2$ and/or greater than about 175 $(g \cdot in)/in^2$ and/or less than about 500 $(g \cdot in)/in^2$ and/or less than about 400 $(g \cdot in)/in^2$ and/or less than about 350 $(g \cdot in)/in^2$ and/or less than about 300 $(g \cdot in)/in^2$ and/or from about 40 $(g \cdot in)/in^2$ to about 500 $(g \cdot in)/in^2$ and/or from about 35 $(g \cdot in)/in^2$ to about 400 $(g \cdot in)/in^2$ and/or from about 50 $(g \cdot in)/in^2$ to about 350 $(g \cdot in)/in^2$ and/or from about 75 $(g \cdot in)/in^2$ to about 300 $(g \cdot in)/in^2$.

In one example of the fibrous structures of the present invention, the fibrous structure exhibits a VFS of greater than about 11 g/g and one or more of the following: a Dry CD Tensile Modulus of less than about 1500 g/cm and/or a Wet CD TEA of greater than about 35 $(g \cdot in)/in^2$ and/or a Wet MD TEA of greater than about 40 $(g \cdot in)/in^2$.

The values of these properties associated with a fibrous structure are determined according to the respective test methods described herein.

To further illustrate the fibrous structures of the present invention, Table 2 sets forth certain properties of known and commercially available fibrous structures and a fibrous structure in accordance with the present invention.

Table 2

Property	Duramax®	Viva® (Wetlaid)	Viva® (Airlaid)	Bounty®	Scott®	Sparkle®	Invention Example
Wet MD	377	21.4	34.5	22.4	16.7	14.8	90

Property	Duramax®	Viva® (Wetlaid)	Viva® (Airlaid)	Bounty®	Scott®	Sparkle®	Invention Example
TEA $(g \cdot in)/in^2$							
Wet CD TEA $(g \cdot in)/in^2$	340	22.6	31.7	18.1	8.9	8.1	209
Dry CD Tensile Modulus g/cm	728	299	660	1844	1500	5900	400
VFS g/g	5.7	10.4	10.9	9.9	8	5.6	13

Process For Making A Fibrous Structure

A nonlimiting example of a process for making a fibrous structure according to the present invention is represented in Fig. 10. The process shown in Fig. 10 comprises the step of mixing a plurality of solid additives 14 with a plurality of filaments 12. In one example, the solid additives 14 are wood pulp fibers, such as SSK fibers and/or Eucalytpus fibers, and the filaments 12 are polypropylene filaments. The solid additives 14 may be combined with the filaments 12, such as by being delivered to a stream of filaments 12 from a hammermill 66 via a solid additive spreader 67 to form a mixture of filaments 12 and solid additives 14. The filaments 12 may be created by meltblowing from a meltblow die 68. The mixture of solid additives 14 and filaments 12 are collected on a collection device, such as a belt 70 to form a fibrous structure 72. The collection device may be a patterned and/or molded belt that results in the fibrous structure exhibiting a surface pattern, such as a non-random, repeating pattern. The molded belt may have a three-dimensional pattern on it that gets imparted to the fibrous structure 72 during the process.

In one example of the present invention, the fibrous structures are made using a die comprising at least one filament-forming hole, and/or 2 or more and/or 3 or more rows of filament-forming holes from which filaments are spun. At least one row of holes contains 2 or more and/or 3 or more and/or 10 or more filament-forming holes. In addition to the filament-forming holes, the die comprises fluid-releasing holes, such as gas-releasing holes, in one example air-releasing holes, that provide attenuation to the filaments formed from the filament-

forming holes. One or more fluid-releasing holes may be associated with a filament-forming hole such that the fluid exiting the fluid-releasing hole is parallel or substantially parallel (rather than angled like a knife-edge die) to an exterior surface of a filament exiting the filament-forming hole. In one example, the fluid exiting the fluid-releasing hole contacts the exterior surface of a filament formed from a filament-forming hole at an angle of less than 30° and/or less than 20° and/or less than 10° and/or less than 5° and/or about 0°. One or more fluid releasing holes may be arranged around a filament-forming hole. In one example, one or more fluid-releasing holes are associated with a single filament-forming hole such that the fluid exiting the one or more fluid releasing holes contacts the exterior surface of a single filament formed from the single filament-forming hole. In one example, the fluid-releasing hole permits a fluid, such as a gas, for example air, to contact the exterior surface of a filament formed from a filament-forming hole rather than contacting an inner surface of a filament, such as what happens when a hollow filament is formed.

In one example, the die comprises a filament-forming hole positioned within a fluid-releasing hole. The fluid-releasing hole 74 may be concentrically or substantially concentrically positioned around a filament-forming hole 76 such as is shown in Fig. 11.

In another example, the die comprises filament-forming holes and fluid-releasing holes arranged to produce a plurality of filaments that exhibit a broader range of filament diameters than known filament-forming hole dies, such as knife-edge dies. For example, as shown in Fig. 12, a fibrous structure made by a known knife-edge die produces a fibrous structure comprising filaments having a narrower distribution of average filament diameters than a fibrous structure made by a die according to the present invention, as shown in Fig. 13. As is evidenced by Fig. 13, the fibrous structure made by a die according to the present invention may comprise filaments that exhibit an average filament diameter of less than 1μm. Such filaments are not seen in the fibrous structure made by the known knife-edge die as shown in Fig. 12.

After the fibrous structure 72 has been formed on the collection device, the fibrous structure 72 may be subjected to post-processing operations such as embossing, thermal bonding, tuft-generating operations, moisture-imparting operations, and surface treating operations to form a finished fibrous structure. One example of a surface treating operation that the fibrous structure may be subjected to is the surface application of an elastomeric binder, such as ethylene vinyl acetate (EVA), latexes, and other elastomeric binders. Such an elastomeric binder may aid in reducing the lint created from the fibrous structure during use by consumers. The elastomeric binder may be applied to one or more surfaces of the fibrous structure in a pattern, especially a

non-random repeating pattern, or in a manner that covers or substantially covers the entire surface(s) of the fibrous structure.

In one example, the fibrous structure 72 and/or the finished fibrous structure may be combined with one or more other fibrous structures. For example, another fibrous structure, such as a filament-containing fibrous structure, such as a polypropylene filament fibrous structure may be associated with a surface of the fibrous structure 72 and/or the finished fibrous structure. The polypropylene filament fibrous structure may be formed by meltblowing polypropylene filaments (filaments that comprise a second polymer that may be the same or different from the polymer of the filaments in the fibrous structure 72) onto a surface of the fibrous structure 72 and/or finished fibrous structure. In another example, the polypropylene filament fibrous structure may be formed by meltblowing filaments comprising a second polymer that may be the same or different from the polymer of the filaments in the fibrous structure 72 onto a collection device to form the polypropylene filament fibrous structure. The polypropylene filament fibrous structure may then be combined with the fibrous structure 72 or the finished fibrous structure to make a two-ply fibrous structure – three-ply if the fibrous structure 72 or the finished fibrous structure is positioned between two plies of the polypropylene filament fibrous structure like that shown in Fig. 5 for example. The polypropylene filament fibrous structure may be thermally bonded to the fibrous structure 72 or the finished fibrous structure via a thermal bonding operation.

In yet another example, the fibrous structure 72 and/or finished fibrous structure may be combined with a filament-containing fibrous structure such that the filament-containing fibrous structure, such as a polysaccharide filament fibrous structure, such as a starch filament fibrous structure, is positioned between two fibrous structures 72 or two finished fibrous structures like that shown in Fig. 6 for example.

The process for making fibrous structure 72 may be close coupled (where the fibrous structure is convolutedly wound into a roll prior to proceeding to a converting operation) or directly coupled (where the fibrous structure is not convolutedly wound into a roll prior to proceeding to a converting operation) with a converting operation to emboss, print, deform, surface treat, or other post-forming operation known to those in the art. For purposes of the present invention, direct coupling means that the fibrous structure 72 can proceed directly into a converting operation rather than, for example, being convolutedly wound into a roll and then unwound to proceed through a converting operation.

The process of the present invention may include preparing individual rolls of fibrous structure and/or sanitary tissue product comprising such fibrous structure(s) that are suitable for

consumer use. The fibrous structure may be contacted by a bonding agent (such as an adhesive and/or dry strength agent), such that the ends of a roll of sanitary tissue product according to the present invention comprise such adhesive and/or dry strength agent.

The process may further comprise contacting an end edge of a roll of fibrous structure with a material that is chemically different from the filaments and fibers, to create bond regions that bond the fibers present at the end edge and reduce lint production during use. The material may be applied by any suitable process known in the art. Nonlimiting examples of suitable processes for applying the material include non-contact applications, such as spraying, and contact applications, such as gravure roll printing, extruding, surface transferring. In addition, the application of the material may occur by transfer from contact of a log saw and/or perforating blade containing the material since, for example, the perforating operation, an edge of the fibrous structure that may produce lint upon dispensing a fibrous structure sheet from an adjacent fibrous structure sheet may be created.

Nonlimiting Example of Process for Making a Fibrous Structure of the Present Invention:

A 47.5% :47.5%:5% blend of Exxon-Mobil PP3546 polypropylene : Sunoco CP200VM polypropylene : Polyvel S-1416 wetting agent is dry blended, to form a melt blend. The melt blend is heated to 475°F through a melt extruder. A 10" wide Biax 12 row spinnerette with 192 nozzles per cross-direction inch, commercially available from Biax Fiberfilm Corporation, is utilized. 32 nozzles per cross-direction inch of the 192 nozzles have a 0.018" inside diameter while the remaining nozzles are solid, i.e. there is no opening in the nozzle. Approximately 0.17 grams per hole per minute (ghm) of the melt blend is extruded from the open nozzles to form meltblown filaments from the melt blend. Approximately 200 SCFM of compressed air is heated such that the air exhibits a temperature of 395°F at the spinnerette. Approximately 175 grams / minute of Koch 4825 semi-treated SSK pulp is defibrillated through a hammermill to form SSK wood pulp fibers (solid additive). 330 SCFM of air at 85-90°F and 85% relative humidity (RH) is drawn into the hammermill and carries the pulp fibers to a solid additive spreader. The solid additive spreader turns the pulp fibers and distributes the pulp fibers in the cross-direction such that the pulp fibers are injected into the meltblown filaments in a perpendicular fashion through a 2" x 10" cross-direction (CD) slot. A forming box surrounds the area where the meltblown filaments and pulp fibers are commingled. This forming box is designed to reduce the amount of air allowed to enter or escape from this commingling area; however, there is a 2" x 12" opening in the bottom of the forming box designed to permit additional cooling air to enter. A forming vacuum pulls air through a forming fabric thus collecting the commingled meltblown filaments

and pulp fibers to form a fibrous structure. The forming vacuum is adjusted until an additional 400 SCFM of room air is drawn into the slot in the forming box. The fibrous structure formed by this process comprises about 75% by dry fibrous structure weight of pulp and about 25% by dry fibrous structure weight of meltblown filaments.

As shown in Fig. 14, the solid additive spreader 78 has an inlet 80 and an exit 82. Any suitable material known in the art may be used to make the spreader 78. Nonlimiting examples of suitable materials include non-conductive materials. For example, stainless steel and/or sheet metal may be used to fabricate the spreader 78. A pulp and air mixture 84 created in the hammermill (not shown) enters the spreader 78 through a duct (not shown) connecting the hammermill and spreader 78 at greater than about 8,000 fpm velocity and/or greater than about 14,000 fpm. The inlet 80 is tilted at an angle α at approximately 5° upstream from perpendicular of the exit 82. The exit 82 of the solid additive spreader 78 has a height H in the range of about 2.54 cm (1 inch) to about 25.40 cm (10 inches). The width W of the exit 82 is from about 1.27 cm (0.5 inch) to about 10.16 cm (4 inches). Typically the width W of the exit 82 is about 5.08 cm (2 inches). The length L of the spreader 78 is from about 60.96 cm (24 inches) to about 243.84 cm (96 inches) and/or from about 91.44 cm (36 inches) to about 182.88 cm (72 inches) and/or from about 121.92 cm (48 inches) to about 152.40 cm (60 inches). A tapering of the height H of the spreader 78 occurs from the inlet end 86 to the exit end 88 to continually accelerate the pulp and air mixture 84. This tapering is from about 10.16 cm (4 inches) in height at the inlet 80 to about 5.08 cm (2 inches) in height at the exit 82. However, the spreader 78 may incorporate other similar taperings. The inlet end 86 of the spreader 78 has a semi-circular arc from the top view with a radius of from about 7.62 cm (3 inches) to about 50.80 cm (20 inches) and/or from about 12.70 cm (5 inches) to about 25.40 cm (10 inches). As shown in Fig. 15, multiple semi-circular arcs can be assembled to produce the desired spreader width. Each semi-circular arc would comprise its own inlet 80 centered in each of these semi-circular arcs.

Optionally, a meltblown layer of the meltblown filaments can be added to one or both sides of the above formed fibrous structure. This addition of the meltblown layer can help reduce the lint created from the fibrous structure during use by consumers and is preferably performed prior to any thermal bonding operation of the fibrous structure. The meltblown filaments for the exterior layers can be the same or different than the meltblown filaments used on the opposite layer or in the center layer(s).

The fibrous structure may be convolutedly wound to form a roll of fibrous structure. The end edges of the roll of fibrous structure may be contacted with a material to create bond regions.

TEST METHODS

Unless otherwise indicated, all tests described herein including those described under the Definitions section and the following test methods are conducted on samples that have been conditioned in a conditioned room at a temperature of 73°F ± 4°F (about 23°C ± 2.2°C) and a relative humidity of 50% ± 10% for 2 hours prior to the test. Samples conditioned as described herein are considered dry samples (such as "dry fibrous structures") for purposes of this invention. Further, all tests are conducted in such conditioned room.

A. Pore Volume Distribution Test Method

Pore Volume Distribution measurements are made on a TRI/Autoporosimeter (TRI/Princeton Inc. of Princeton, NJ). The TRI/Autoporosimeter is an automated computer-controlled instrument for measuring pore volume distributions in porous materials (e.g., the volumes of different size pores within the range from 1 to 1000 □μm effective pore radii). Complimentary Automated Instrument Software, Release 2000.1, and Data Treatment Software, Release 2000.1 is used to capture, analyze and output the data. More information on the TRI/Autoporosimeter, its operation and data treatments can be found in The Journal of Colloid and Interface Science 162 (1994), pgs 163-170, incorporated here by reference.

As used in this application, determining Pore Volume Distribution involves recording the increment of liquid that enters a porous material as the surrounding air pressure changes. A sample in the test chamber is exposed to precisely controlled changes in air pressure. The size (radius) of the largest pore able to hold liquid is a function of the air pressure. As the air pressure increases (decreases), different size pore groups drain (absorb) liquid. The pore volume of each group is equal to this amount of liquid, as measured by the instrument at the corresponding pressure. The effective radius of a pore is related to the pressure differential by the following relationship.

$$\text{Pressure differential} = [(2)\,\gamma \cos\Theta] / \text{effective radius}$$

where γ = liquid surface tension, and Θ = contact angle.

Typically pores are thought of in terms such as voids, holes or conduits in a porous material. It is important to note that this method uses the above equation to calculate effective pore radii based on the constants and equipment controlled pressures. The above equation assumes uniform cylindrical pores. Usually, the pores in natural and manufactured porous materials are not perfectly cylindrical, nor all uniform. Therefore, the effective radii reported here may not equate exactly to measurements of void dimensions obtained by other methods such as microscopy. However, these measurements do provide an accepted means to characterize relative differences in void structure between materials.

The equipment operates by changing the test chamber air pressure in user-specified increments, either by decreasing pressure (increasing pore size) to absorb liquid, or increasing pressure (decreasing pore size) to drain liquid. The liquid volume absorbed (drained) at each pressure increment is the cumulative volume for the group of all pores between the preceding pressure setting and the current setting.

In this application of the TRI/Autoporosimeter, the liquid is a 0.2 weight % solution of octylphenoxy polyethoxy ethanol (Triton X-100 from Union Carbide Chemical and Plastics Co. of Danbury, CT.) in distilled water. The instrument calculation constants are as follows: ρ (density) = 1 g/cm^3; γ (surface tension) = 31 dynes/cm; cosΘ = 1. A 0.22µm Millipore Glass Filter (Millipore Corporation of Bedford, MA; Catalog # GSWP09025) is employed on the test chamber's porous plate. A plexiglass plate weighing about 24 g (supplied with the instrument) is placed on the sample to ensure the sample rests flat on the Millipore Filter. No additional weight is placed on the sample.

The remaining user specified inputs are described below. The sequence of pore sizes (pressures) for this application is as follows (effective pore radius in µm): 1, 2.5, 5, 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 225, 250, 275, 300, 350, 400, 500, 600, 800, 1000. This sequence starts with the sample dry, saturates it as the pore settings increase (typically referred to with respect to the procedure and instrument as the 1st absorption).

In addition to the test materials, a blank condition (no sample between plexiglass plate and Millipore Filter) is run to account for any surface and/or edge effects within the chamber. Any pore volume measured for this blank run is subtracted from the applicable pore grouping of the test sample. This data treatment can be accomplished manually or with the available TRI/Autoporosimeter Data Treatment Software, Release 2000.1.

Percent (%)Total Pore Volume is a percentage calculated by taking the volume of fluid in the specific pore radii range divided by the Total Pore Volume. The TRI/Autoporosimeter outputs the volume of fluid within a range of pore radii. The first data obtained is for the "2.5 micron" pore radii which includes fluid absorbed between the pore sizes of 1 to 2.5 micron radius. The next data obtained is for "5 micron" pore radii, which includes fluid absorbed between the 2.5micron and 5 micron radii, and so on. Following this logic, to obtain the volume held within the range of 101-200 micron radii, one would sum the volumes obtained in the range titled "120 micron", "140 micron", "160 micron", "180 micron", and finally the "200 micron" pore radii ranges. For example, % Total Pore Volume 101-200 micron pore radii = (volume of fluid between 101-200 micron pore radii) / Total Pore Volume

B. Horizontal Full Sheet (HFS) Test Method

The Horizontal Full Sheet (HFS) test method determines the amount of distilled water absorbed and retained by a fibrous structure of the present invention. This method is performed by first weighing a sample of the fibrous structure to be tested (referred to herein as the "dry weight of the sample"), then thoroughly wetting the sample, draining the wetted sample in a

horizontal position and then reweighing (referred to herein as "wet weight of the sample"). The absorptive capacity of the sample is then computed as the amount of water retained in units of grams of water absorbed by the sample. When evaluating different fibrous structure samples, the same size of fibrous structure is used for all samples tested.

The apparatus for determining the HFS capacity of fibrous structures comprises the following:

1) An electronic balance with a sensitivity of at least ±0.01 grams and a minimum capacity of 1200 grams. The balance should be positioned on a balance table and slab to minimize the vibration effects of floor/benchtop weighing. The balance should also have a special balance pan to be able to handle the size of the sample tested (i.e.; a fibrous structure sample of about 11 in. (27.9 cm) by 11 in. (27.9 cm)). The balance pan can be made out of a variety of materials. Plexiglass is a common material used.

2) A sample support rack (Fig. 16) and sample support rack cover (Fig. 17) is also required. Both the rack and cover are comprised of a lightweight metal frame, strung with 0.012 in. (0.305 cm) diameter monofilament so as to form a grid as shown in Fig. 16. The size of the support rack and cover is such that the sample size can be conveniently placed between the two.

The HFS test is performed in an environment maintained at 23± 1° C and 50± 2% relative humidity. A water reservoir or tub is filled with distilled water at 23± 1 ° C to a depth of 3 inches (7.6 cm).

Eight samples of a fibrous structure to be tested are carefully weighed on the balance to the nearest 0.01 grams. The dry weight of each sample is reported to the nearest 0.01 grams. The empty sample support rack is placed on the balance with the special balance pan described above. The balance is then zeroed (tared). One sample is carefully placed on the sample support rack. The support rack cover is placed on top of the support rack. The sample (now sandwiched between the rack and cover) is submerged in the water reservoir. After the sample is submerged for 60 seconds, the sample support rack and cover are gently raised out of the reservoir.

The sample, support rack and cover are allowed to drain horizontally for 120±5 seconds, taking care not to excessively shake or vibrate the sample. While the sample is draining, the rack cover is carefully removed and all excess water is wiped from the support rack. The wet sample and the support rack are weighed on the previously tared balance. The weight is recorded to the nearest 0.01g. This is the wet weight of the sample.

The gram per fibrous structure sample absorptive capacity of the sample is defined as (wet weight of the sample - dry weight of the sample). The horizontal absorbent capacity (HAC)

is defined as: absorbent capacity = (wet weight of the sample - dry weight of the sample) / (dry weight of the sample) and has a unit of gram/gram.

C. Vertical Full Sheet (VFS) Test Method

The Vertical Full Sheet (VFS) test method determines the amount of distilled water absorbed and retained by a fibrous structure of the present invention. This method is performed by first weighing a sample of the fibrous structure to be tested (referred to herein as the "dry weight of the sample"), then thoroughly wetting the sample, draining the wetted sample in a vertical position and then reweighing (referred to herein as "wet weight of the sample"). The absorptive capacity of the sample is then computed as the amount of water retained in units of grams of water absorbed by the sample. When evaluating different fibrous structure samples, the same size of fibrous structure is used for all samples tested.

The apparatus for determining the VFS capacity of fibrous structures comprises the following:

1) An electronic balance with a sensitivity of at least ±0.01 grams and a minimum capacity of 1200 grams. The balance should be positioned on a balance table and slab to minimize the vibration effects of floor/benchtop weighing. The balance should also have a special balance pan to be able to handle the size of the sample tested (i.e.; a fibrous structure sample of about 11 in. (27.9 cm) by 11 in. (27.9 cm)). The balance pan can be made out of a variety of materials. Plexiglass is a common material used.

2) A sample support rack (Fig. 16) and sample support rack cover (Fig. 17) is also required. Both the rack and cover are comprised of a lightweight metal frame, strung with 0.012 in. (0.305 cm) diameter monofilament so as to form a grid as shown in Fig. 16. The size of the support rack and cover is such that the sample size can be conveniently placed between the two.

The VFS test is performed in an environment maintained at 23± 1° C and 50± 2% relative humidity. A water reservoir or tub is filled with distilled water at 23± 1 ° C to a depth of 3 inches (7.6 cm).

Eight 19.05 cm (7.5 inch) x 19.05 cm (7.5 inch) to 27.94 cm (11 inch) x 27.94 cm (11 inch) samples of a fibrous structure to be tested are carefully weighed on the balance to the nearest 0.01 grams. The dry weight of each sample is reported to the nearest 0.01 grams. The empty sample support rack is placed on the balance with the special balance pan described above. The balance is then zeroed (tared). One sample is carefully placed on the sample support rack. The support rack cover is placed on top of the support rack. The sample (now sandwiched

between the rack and cover) is submerged in the water reservoir. After the sample is submerged for 60 seconds, the sample support rack and cover are gently raised out of the reservoir.

The sample, support rack and cover are allowed to drain vertically for 60±5 seconds, taking care not to excessively shake or vibrate the sample. While the sample is draining, the rack cover is carefully removed and all excess water is wiped from the support rack. The wet sample and the support rack are weighed on the previously tared balance. The weight is recorded to the nearest 0.01g. This is the wet weight of the sample.

The procedure is repeated for with another sample of the fibrous structure, however, the sample is positioned on the support rack such that the sample is rotated 90° compared to the position of the first sample on the support rack.

The gram per fibrous structure sample absorptive capacity of the sample is defined as (wet weight of the sample - dry weight of the sample). The calculated VFS is the average of the absorptive capacities of the two samples of the fibrous structure.

D. Wet MD TEA, Wet CD TEA, Dry CD Tensile Modulus ("Tangent Modulus") Test Methods

The Wet MD TEA, Wet CD TEA and Dry CD Tensile Modulus of a fibrous structure are all determined using a Thwing Albert EJA Tensile Tester. A 2.54 cm (1 inch) wide strip of the fibrous structure to be tested is placed in the grips of the Tensile Tester at a gauge length of 10.16 cm (4 inches). The Crosshead Speed of the Tensile Tester is set at 10.16 cm/min (4 inches/min) and the Break Sensitivity is set at 20 g. Eight (8) samples are run on the Tensile Tester and an average of the respective Wet MD TEA, Wet CD TEA values from the 8 samples is reported as the Wet MD TEA value and the Wet CD TEA. The Dry CD Tensile Modulus is reported as the average of the Dry CD Tensile Modulus from the 8 samples measured at 15 g/cm.

E. Basis Weight Test Method

Basis weight is measured by preparing one or more samples of a certain area (m^2) and weighing the sample(s) of a fibrous structure according to the present invention and/or a paper product comprising such fibrous structure on a top loading balance with a minimum resolution of 0.01 g. The balance is protected from air drafts and other disturbances using a draft shield. Weights are recorded when the readings on the balance become constant. The average weight (g) is calculated and the average area of the samples (m^2). The basis weight (g/m^2) is calculated by dividing the average weight (g) by the average area of the samples (m^2).

The dimensions and values disclosed herein are not to be understood as being strictly limited to the exact numerical values recited. Instead, unless otherwise specified, each such dimension is intended to mean both the recited value and a functionally equivalent range

surrounding that value. For example, a dimension disclosed as "40 mm" is intended to mean "about 40 mm."

All documents cited in the Detailed Description of the Invention are, in relevant part, incorporated herein by reference; the citation of any document is not to be construed as an admission that it is prior art with respect to the present invention. To the extent that any meaning or definition of a term in this document conflicts with any meaning or definition of the same term in a document incorporated by reference, the meaning or definition assigned to that term in this document shall govern.

While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modifications can be made without departing from the spirit and scope of the invention. It is therefore intended to cover in the appended claims all such changes and modifications that are within the scope of this invention.

CLAIMS

What is claimed is:

1. A process for making a fibrous structure, the process comprising the steps of:
   a. providing a die comprising three or more rows of one or more filament-forming holes;
   b. supplying at least a first polymer to the die;
   c. producing a plurality of filaments comprising the first polymer from the die;
   d. combining the filaments with solid additives to form a mixture; and
   e. collecting the mixture on a collection device to produce a fibrous structure.

2. The process according to Claim 1 wherein at least one row of the one or more filament-forming holes comprises two or more filament-forming holes.

3. The process according to Claim 1 wherein one or more fluid-releasing holes are associated with a filament-forming hole.

4. The process according to Claim 3 wherein more than one fluid-releasing holes is associated with a filament-forming hole.

5. The process according to Claim 3 wherein at least one of the one or more fluid-releasing holes is concentrically positioned around one filament-forming hole.

6. The process according to Claim 1 wherein the first polymer comprises a synthetic polymer.

7. The process according to Claim 6 wherein the synthetic polymer is selected from the group consisting of: polyvinyl alcohol, polyvinyl alcohol derivatives, polyesters, nylons, polyolefins, polylactic acids, polyhydroxyalkanoates , polycaprolactones and mixtures thereof.

8. The process according to Claim 7 wherein the synthetic polymer comprises a polyolefin.

9. The process according to Claim 8 wherein the polyolefin comprises polypropylene.

10. The process according to Claim 7 wherein the synthetic polymer is selected from the group consisting of: polylactic acids, polyhydroxyalkanoates , polycaprolactones and mixtures thereof.

11. The process according to Claim 1 wherein the first polymer comprises a natural polymer.

12. The process according to Claim 11 wherein the natural polymer is selected from the group consisting of: starch, starch derivatives, cellulose, cellulose derivatives, hemicellulose, hemicellulose derivatives and mixtures thereof.

13. The process according to Claim 1 wherein the solid additives comprise fibers.

14. The process according to Claim 13 wherein the fibers comprise wood pulp fibers.

15. The process according to Claim 1 wherein the solid additives are combined with the plurality of filaments by a solid additive spreader.

16. The process according to Claim 1 wherein the process further comprises the step of:

f. contacting a surface of the fibrous structure with a plurality of filaments comprising a second polymer.

17. The process according to Claim 16 wherein the plurality of filaments comprising the second polymer are in the form of a second fibrous structure.

18. The process according to Claim 16 wherein the second polymer is the same as the first polymer.

19. The process according to Claim 1 wherein the fluid released by the fluid-releasing holes comprises air.

20. The process according to Claim 1 wherein the fibrous structure exhibits a pore volume distribution such that greater than about 40% of the total pore volume present in the fibrous structure exists in pores of radii of from about 121μm to about 200μm.

21. The process according to Claim 1 wherein the process further comprises the step of subjecting the fibrous structure to a thermal bonding operation.

22. The process according to Claim 1 wherein the process is directly coupled to a post-processing operation.

23. The process according to Claim 1 wherein the process is closely coupled to a post-processing operation.

24. A process for making a fibrous structure, the process comprising the steps of:

a. providing a die comprising three or more rows of one or more filament-forming holes;

b. supplying a polyolefin polymer to the die;

c. producing a plurality of filaments comprising the polyolefin polymer from the die;

d. combining the filaments with wood pulp fibers to form a mixture; and

e. collecting the mixture on a collection device to produce a fibrous structure.

ABSTRACT

Processes for making fibrous structures and more particularly processes for making fibrous structures comprising filaments are provided.