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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/345,981	08/02/2022	11399535	12914-003C2	6659

151692 7590 07/13/2022

Robert L. Wolter
Wolter Van Dyke Davis, PLLC
1900 Summit Tower Blvd.
SUITE 140
Orlando, FL 32810

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):

Christopher M. SEATON, Tampa, FL;
Timothy R. SEATON, Tampa, FL;

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

RUGGED CROSS HUNTING BLINDS LLC, Tampa, FL;

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.

PART B - FEE(S) TRANSMITTAL

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

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

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

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

151692 7590 03/23/2022

Robert L. Wolter
Wolter Van Dyke Davis, PLLC
1900 Summit Tower Blvd.
SUITE 140
Orlando, FL 32810

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/345,981	06/11/2021	Christopher M. SEATON	12914-003C2	6659

TITLE OF INVENTION: CAMOUFLAGE MATERIAL FOR A HUNTING BLIND

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	06/23/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
JACKSON, DANIELLE	3636	135-115000

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 Robert L. Wolter
2 WOLTER, VAN DYKE,
3 DAVIS, PLLC

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: RUGGED CROSS HUNTING BLINDS LLC

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Tampa, FL

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 /Robert L. Wolter/ Date June 14, 2022

Typed or printed name ROBERT L. WOLTER Registration No. 36972

Electronic Patent Application Fee Transmittal

Application Number:	17345981
Filing Date:	11-Jun-2021
Title of Invention:	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND
First Named Inventor/Applicant Name:	Christopher M. SEATON
Filer:	Robert L. Wolter./Kathy Tissue
Attorney Docket Number:	12914-003C2

Filed as Small 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	2501	1	600	600

DBR Finance, Inc., Ex. 1006

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**600**

DBR Finance, Inc., Ex. 1006

Electronic Acknowledgement Receipt

EFS ID:	45953246
Application Number:	17345981
International Application Number:	
Confirmation Number:	6659
Title of Invention:	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND
First Named Inventor/Applicant Name:	Christopher M. SEATON
Customer Number:	151692
Filer:	Robert L. Wolter./Kathy Tissue
Filer Authorized By:	Robert L. Wolter.
Attorney Docket Number:	12914-003C2
Receipt Date:	14-JUN-2022
Filing Date:	11-JUN-2021
Time Stamp:	15:43:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$600
RAM confirmation Number	E20226DF43144273
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

DBR Finance, Inc., Ex. 1006

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)	12914003C2_20220614_IssueFee.pdf	94954 9978c3153eb48b881aa58ec68acf4ec8208c7ff8	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	38244 fa3ab10599d62a17c8fbeb78d72f8d2be89af9b6	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	133198		

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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/345,981	06/11/2021	Christopher M. SEATON	12914-003C2	6659

151692 7590 04/18/2022

Robert L. Wolter
Wolter Van Dyke Davis, PLLC
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SUITE 140
Orlando, FL 32810

EXAMINER
JACKSON, DANIELLE

ART UNIT	PAPER NUMBER
3636	

NOTIFICATION DATE	DELIVERY MODE
04/18/2022	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):

cnugent@savvyiplaw.com
patents@savvyiplaw.com
rwolter@savvyiplaw.com

Response to Rule 312 Communication	Application No.	Applicant(s)	
	17/345,981	SEATON et al.	
	Examiner	Art Unit	AIA (FITF) Status
	DANIELLE JACKSON	3636	Yes

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

1. ☑ The amendment filed on 29 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).

/DAVID R DUNN/
Supervisory Patent Examiner, Art Unit 3636

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: SEATON, Christopher M. Group Art Unit: 3636

Serial No.: 17/345,981 Examiner: Jackson, Danielle

Filed: June 11, 2021 Conf. Number: 6659

Attorney Docket: 12914-003C2

For: CAMOUFLAGE MATERIAL FOR A HUNTING BLIND

AMENDMENT UNDER 37 C.F.R. § 1.312

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

Dear Sir:

Pursuant to 37 C.F.R. §1.312, please amend the above-identified application as provided on the following page.

IN THE CLAIMS

1. (Currently Amended) A camouflage structure comprising:

a pop-up frame including a plurality of flexible frame members, said plurality of flexible frame members comprising at least two spaced apart frame members along a side of the ~~frame~~ camouflage structure and at least two spaced apart frame members along a roof of the ~~frame~~camouflage structure; and

one or more panels of mesh material of interwoven fabric configured to be attached between the at least two spaced apart frame members that are along the side of the ~~frame~~camouflage structure, said one or more panels comprising:

a first side with a camouflage pattern; and

a second side with a dark color coating, said second side opposite to the first side; and

one or more panels of non-mesh material provided along the roof of the camouflage structure and configured to be attached to the at least two spaced apart frame members that are along the roof of the ~~frame~~ camouflage structure to cover an area between the at least two spaced apart frame members;

wherein the one or more panels of the mesh material define an outer surface of the camouflage structure; and

wherein the one or more panels of non-mesh material are non-transmissive such that incident radiation from an exterior of the camouflage structure is not transmitted through the non-mesh material.

2. (Previously Presented) The camouflage structure of claim 1, wherein the camouflage pattern comprises one or more ink substances printed on the first side and the dark color coating comprises a second ink substance printed on the second side.

3. (Original) The camouflage structure of claim 1, wherein the camouflage pattern is based on an exterior environment where the camouflage structure will be positioned to make the camouflage structure blend in with the exterior environment.

4. (Previously Presented) The camouflage structure of claim 1, wherein the dark color coating comprises a single color coating.

5. (Previously Presented) The camouflage structure of claim 1, wherein the mesh material is partially transmissive such that a portion of incident radiation from an exterior of the camouflage structure is reflected off the camouflage pattern back into the exterior, a portion of incident radiation from an interior of the camouflage structure is transmitted through the mesh material to the exterior and wherein a ratio of an intensity of the reflected portion to an intensity of the transmitted portion is above a threshold value such that an exterior of the camouflage structure is visible through the camouflage material from the interior of the camouflage structure and the interior of the camouflage structure is not visible through the mesh material from the exterior of the camouflage structure;

and wherein the threshold value is 2.

6. (Previously Presented) The camouflage structure of claim 1, wherein a first side of the camouflage structure includes a window that can be opened to provide a shooting position upon the approach of prey from the first side.

7. (Original) The camouflage structure of claim 1, wherein the mesh material is made of polyester material and an acrylic fiber.

8. (Original) The mesh material of claim 1, wherein the mesh material is a vinyl-coated polyester material.

9. (Original) The mesh material of claim 1, wherein the mesh material is formed by weaving yarn material.

10. (Previously Presented) The camouflage structure of claim 1,

wherein the mesh material is partially transmissive such that a portion of incident radiation from an exterior of the camouflage structure is reflected off the camouflage

pattern back into the exterior, a portion of incident radiation from an interior of the camouflage structure is transmitted through the mesh material to the exterior and wherein a ratio of an intensity of the reflected portion to an intensity of the transmitted portion is above a threshold value such that an exterior of the camouflage structure is visible through the camouflage material from the interior of the camouflage structure and the interior of the camouflage structure is not visible through the mesh material from the exterior of the camouflage structure;

and wherein the threshold value is 1.

11. (Previously Presented) The camouflage structure of claim 1, wherein the mesh material is produced by;

printing the camouflage pattern on the first side of the mesh material using a first ink, and

printing the dark color coating on the second side of the mesh material using a second ink.

12. (Previously Presented) The camouflage structure of claim 6, wherein a second side of the camouflage structure includes a window that can be opened to provide a shooting position upon the approach of prey from the second side.

13. (Previously Presented) The camouflage structure of claim 1, wherein the second side of the one or more panels of the mesh material defines an interior of the camouflage structure and the first side of the one or more panels of the mesh material defines an exterior of the camouflage structure; and

wherein the plurality of frame members are configured to form an enclosure that surrounds the interior.

14. (Previously Presented) The camouflage structure of claim 13, wherein the one or more panels of mesh material provide a 360 degree view of the exterior of the camouflage structure from the interior of the camouflage structure.

15. (Currently Amended) The camouflage structure of claim 1, wherein flexible frame members along thea side of the camouflage structure are interconnected with the one or more panels of non-mesh material along the roof of the camouflage structure.

16. (canceled)

17. (Previously Presented) The camouflage structure of claim 15, wherein the pop-up frame is movable from a folded position to a deployed position.

18. (Currently Amended) The camouflage structure of claim 17, wherein the one or more panels of mesh material are secured between the at least two spaced apart frame members along the side of the ~~frame~~ camouflage structure in the folded position such that when the frame is moved from the folded position to the deployed position an exterior of the camouflage structure is visible through the one or more panels of mesh material from an interior of the camouflage structure yet the interior of the camouflage structure is not visible through the one or more panels of mesh material from the exterior of the camouflage structure.

19. (Currently Amended) The camouflage structure of claim 1, wherein the frame members have a variation in the spacing between the at least two spaced apart frame members along the side of the ~~frame~~camouflage structure.

20. (Currently Amended) A camouflage structure comprising:

a pop-up frame including a plurality of flexible frame members, said plurality of flexible frame members comprising at least two spaced apart frame members along a side of the ~~frame~~ camouflage structure and at least two spaced apart frame members along a roof of the ~~frame~~camouflage structure; and

one or more panels of mesh material of interwoven fabric configured to be attached between the at least two spaced apart frame members that are along the side of the ~~frame~~camouflage structure, said one or more panels comprising:

a first side with a camouflage pattern; and

a second side with a dark color coating, said second side opposite to the first side; and

one or more panels of non-mesh material configured to be provided along the roof of the camouflage structure and configured to be attached to the at least two spaced apart frame members that are along the roof of the ~~frame~~ camouflage structure to cover an area between the at least two spaced apart frame members;

wherein the one or more panels of the mesh material define an outer surface of the camouflage structure;

wherein the camouflage pattern is based on an exterior environment where the camouflage structure will be positioned to make the camouflage structure blend in with the exterior environment;

wherein the one or more panels of non-mesh material are non-transmissive such that incident radiation from an exterior of the camouflage structure is not transmitted through the non-mesh material;

wherein the camouflage structure includes a window along ~~a first~~the side of the camouflage structure that can be opened to provide a shooting position upon the approach of prey from the ~~first~~ side;

wherein the pop-up frame is movable from a folded position to a deployed position; and

wherein the one or more panels of mesh material are secured between the at least two spaced apart flexible frame members along the side of the ~~frame~~ camouflage structure in the folded position such that when the frame is moved from the folded position to the deployed position an exterior of the camouflage structure is visible through the one or more panels of mesh material from an interior of the camouflage structure yet the interior of the camouflage structure is not visible through the one or more panels of mesh material from the exterior of the camouflage structure.

REMARKS

Applicant appreciates the Notice of Allowance and Notice of Allowability issued on March 23, 2022. Claims 1, 15, 18, 19 and 20 have been amended to correct minor informalities. No new matter has been added and the amendment does not raise new issues or require further search or consideration. Therefore, entry is respectfully requested.

Should any informality need to be addressed, the Examiner is requested to telephone the undersigned at the telephone number listed.

Respectfully submitted,

Date: March 29, 2022

/CIAN G. O'BRIEN/

Cian G. O'Brien
Reg. No. 55,792
Wolter Van Dyke Davis, PLLC
1900 Summit Tower Boulevard, Suite 140
Orlando, Florida 32810
Telephone: (407) 926-7709
Email: cobrien@savvyiplaw.com

Electronic Acknowledgement Receipt

EFS ID:	45346596
Application Number:	17345981
International Application Number:	
Confirmation Number:	6659
Title of Invention:	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND
First Named Inventor/Applicant Name:	Christopher M. SEATON
Customer Number:	151692
Filer:	Robert L. Wolter./Cynthia Nugent
Filer Authorized By:	Robert L. Wolter.
Attorney Docket Number:	12914-003C2
Receipt Date:	29-MAR-2022
Filing Date:	11-JUN-2021
Time Stamp:	16:42:09
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		12914003C2_312AmendmentV3.pdf	38455 a4358a96953f718d6eac3ec3f7aab162075cea44	yes	7

DBR Finance, Inc., Ex. 1006

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment after Notice of Allowance (Rule 312)	1	1
	Claims	2	6
	Applicant Arguments/Remarks Made in an Amendment	7	7
Warnings:			
Information:			
	Total Files Size (in bytes):	38455	

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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.

UNITED STATES PATENT AND TRADEMARK OFFICE

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NOTICE OF ALLOWANCE AND FEE(S) DUE

151692 7590 03/23/2022

Robert L. Wolter
Wolter Van Dyke Davis, PLLC
1900 Summit Tower Blvd.
SUITE 140
Orlando, FL 32810

EXAMINER
JACKSON, DANIELLE

ART UNIT	PAPER NUMBER
3636	

DATE MAILED: 03/23/2022

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/345,981	06/11/2021	Christopher M. SEATON	12914-003C2	6659

TITLE OF INVENTION: CAMOUFLAGE MATERIAL FOR A HUNTING BLIND

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	06/23/2022

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.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. 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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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)

151692 7590 03/23/2022

Robert L. Wolter
Wolter Van Dyke Davis, PLLC
1900 Summit Tower Blvd.
SUITE 140
Orlando, FL 32810

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/345,981	06/11/2021	Christopher M. SEATON	12914-003C2	6659

TITLE OF INVENTION: CAMOUFLAGE MATERIAL FOR A HUNTING BLIND

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	06/23/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
JACKSON, DANIELLE	3636	135-115000

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. _____

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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.
17/345,981	06/11/2021	Christopher M. SEATON	12914-003C2	6659

151692 7590 03/23/2022

Robert L. Wolter
Wolter Van Dyke Davis, PLLC
1900 Summit Tower Blvd.
SUITE 140
Orlando, FL 32810

EXAMINER	
JACKSON, DANIELLE	

ART UNIT	PAPER NUMBER
3636	

DATE MAILED: 03/23/2022

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.

DBR Finance, Inc., Ex. 1006

Notice of Allowability	Application No. 17/345,981	Applicant(s) SEATON et al.	
	Examiner DANIELLE JACKSON	Art Unit 3636	AIA (FITF) Status Yes

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

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

1. ☑ This communication is responsive to the amendment filed 3/2/2022.
   ☐ 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 1-15 and 17-20 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information , please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

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

   Certified copies:

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

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

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

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

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

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 1/11/2022.
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 _____.

/DAVID R DUNN/
Supervisory Patent Examiner, Art Unit 3636

EXAMINER'S AMENDMENT

Notice of Pre-AIA or AIA Status

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

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in an interview with Cian O'Brien (Reg. No. 55,792) on March 11, 2022.

The application has been amended as follows:

Claim 1, line 12, "a roof" has been changed to --the roof--.

Claim 18, line 2, "the flexible frame members" has been changed to --the at least two spaced apart frame members along the side of the frame--.

Claim 19, line 2, "the spaced apart frame members" has been changed to –the at least two spaced apart frame members along the side of the frame--.

Claim 20, line 12, "a roof" has been changed to --the roof--.

Terminal Disclaimer

The terminal disclaimer filed on March 2, 2022 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on Application 16/998843 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIELLE JACKSON whose telephone number is (571)272-2268. The examiner can normally be reached M-F: 11AM-7PM EST.

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, David Dunn can be reached on (571)272-6670. 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.

/DNJ/
Examiner, Art Unit 3636

/DAVID R DUNN/
Supervisory Patent Examiner, Art Unit 3636

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/345,981	SEATON et al.
	Examiner	Art Unit
	DANIELLE JACKSON	3636

CPC - Searched*		
Symbol	**Date**	**Examiner**
F41H 3/02	03/02/2019	DNJ
Updated above search of parent App. No. 15/444,909	11/06/2021	DNJ
Updated above	02/17/2022	DNJ
Updated above	03/12/2022	DNJ

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

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

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

Search Notes		
Search Notes	**Date**	**Examiner**
Search - see attached	11/06/2021	DNJ
PALM - Inventor Search	11/06/2021	DNJ
Search - see attached	02/17/2022	DNJ
Search - see attached	03/12/2022	DNJ

/DNJ/ Examiner, Art Unit 3636	

DBR Finance, Inc., Ex. 1006

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/345,981	SEATON et al.
	Examiner	Art Unit
	DANIELLE JACKSON	3636

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
Search - see attached		03/12/2022	DNJ

/DNJ/ Examiner, Art Unit 3636	

DBR Finance, Inc., Ex. 1006

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/345,981	SEATON et al.
	Examiner	**Art Unit**
	DANIELLE JACKSON	3636

CPC						
Symbol					**Type**	**Version**
A01M	/	31	/	025	F	2013-01-01
E04H	/	15	/	001	I	2013-01-01
E04H	/	15	/	008	I	2013-01-01
E04H	/	15	/	34	I	2013-01-01
F41H	/	3	/	02	I	2013-01-01
E04H	/	15	/	54	I	2013-01-01

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

/DANIELLE JACKSON/ Examiner, Art Unit 3636	12 March 2022	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	19	
/DAVID R DUNN/ Supervisory Patent Examiner, Art Unit 3636	14 March 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1C, 9

U.S. Patent and Trademark Office — Part of Paper No.: 20220311

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/345,981	SEATON et al.
	Examiner	**Art Unit**
	DANIELLE JACKSON	3636

INTERNATIONAL CLASSIFICATION				
CLAIMED				
A01M31/02	/	31	/	02
E04H15/00	/	15	/	00
E04H15/34	/	15	/	34
F41H3/02	/	3	/	02
E04H15/54	/	15	/	54

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

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

/DANIELLE JACKSON/ Examiner, Art Unit 3636	12 March 2022	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	19	
/DAVID R DUNN/ Supervisory Patent Examiner, Art Unit 3636	14 March 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1C, 9

U.S. Patent and Trademark Office — Part of Paper No.: 20220311

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/345,981	SEATON et al.
	Examiner	**Art Unit**
	DANIELLE JACKSON	3636

☐ 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	11	10	18	19										
2	2	12	11	19	20										
3	3	7	12												
4	4	13	13												
5	5	14	14												
6	6	15	15												
8	7		16												
9	8	16	17												
10	9	17	18												

/DANIELLE JACKSON/ Examiner, Art Unit 3636 (Assistant Examiner)	12 March 2022 (Date)	**Total Claims Allowed:** 19	
/DAVID R DUNN/ Supervisory Patent Examiner, Art Unit 3636 (Primary Examiner)	14 March 2022 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1C, 9

U.S. Patent and Trademark Office Part of Paper No.: 20220311

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/345,981	SEATON et al.
	Examiner	Art Unit
	DANIELLE JACKSON	3636

✓	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	11/05/2021	02/17/2022	03/12/2022						
1	1	✓	✓	=						
2	2	✓	✓	=						
3	3	✓	✓	=						
4	4	✓	✓	=						
5	5	✓	✓	=						
6	6	✓	✓	=						
8	7	✓	✓	=						
9	8	✓	✓	=						
10	9	✓	✓	=						
11	10	✓	✓	=						
12	11	✓	✓	=						
7	12	✓	✓	=						
13	13	✓	✓	=						
14	14	✓	✓	=						
15	15	✓	✓	=						
	16	✓	✓	-						
16	17	✓	✓	=						
17	18	✓	✓	=						
18	19	✓	✓	=						
19	20	✓	✓	=						

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	2232	F41H3/02.cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/03/12 03:40 PM
L2	2	L1 AND @pd>="20220201"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/03/12 03:43 PM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	829	((hunt$3 blind enclosure shelter structure tent) AND (camouflage pattern) AND frame AND (mesh screen)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2022/03/12 04:23 PM
N2	245	((hunt$3 blind enclosure shelter structure tent) AND (camouflage pattern) AND (color solid dark) AND frame AND (mesh screen)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2022/03/12 04:24 PM
N3	47	((hunt$3 blind enclosure shelter structure tent) AND (camouflage pattern) AND (color solid dark) AND frame AND (flexible elastic resilient bend$4) AND (mesh screen)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2022/03/12 04:25 PM

Bibliographic Data

Application No: 17/345,981

Foreign Priority claimed: ○ Yes ◉ No

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

Verified and Acknowledged: /DANIELLE JACKSON/ Examiner's Signature | Initials

Title: CAMOUFLAGE MATERIAL FOR A HUNTING BLIND

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
06/11/2021	135	3636	12914-003C2
RULE			

APPLICANTS

RUGGED CROSS HUNTING BLINDS LLC, Tampa, FL,

INVENTORS

Christopher M. SEATON, Tampa, FL, UNITED STATES

Timothy R. SEATON, Tampa, FL, UNITED STATES

CONTINUING DATA

This application is a CON of 16998843 08/20/2020

16998843 is a CON of 15444909 02/28/2017 PAT 10765108

15444909 has PRO of 62301007 02/29/2016

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

06/22/2021

**** SMALL ENTITY ****

STATE OR COUNTRY

UNITED STATES

ADDRESS

Robert L. Wolter
Wolter Van Dyke Davis, PLLC
1900 Summit Tower Blvd.
SUITE 140
Orlando, FL 32810
UNITED STATES

FILING FEE RECEIVED

$6,160

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

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17345981
Filing Date	2021-06-11
First Named Inventor	Christopher M. SEATON
Art Unit	3636
Examiner Name	Danielle Jackson
Attorney Docket Number	12914-003C2

U.S.PATENTS Remove

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	6919130	B2	2005-07-19	Tokarsky et al.	
	2	4443516	A	1984-04-17	Rogers	

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U.S.PATENT APPLICATION PUBLICATIONS Remove

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					

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17345981
Filing Date	2021-06-11
First Named Inventor	Christopher M. SEATON
Art Unit	3636
Examiner Name	Danielle Jackson
Attorney Docket Number	12914-003C2

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	CHILTON, Tensile structures – textiles for architecture and design, Textiles, Polymers and Composites for Buildings, Woodhead Publishing Series in Textiles: Number 95, 2010, 229-257, Woodhead Publishing Limited, UK	
	2	Saatifil Polyester Technical Data Sheet, SAATI S.p.A, Italy date unknown	

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EXAMINER SIGNATURE

Examiner Signature	/DANIELLE JACKSON/	Date Considered	02/17/2022

*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. /DNJ/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17345981
Filing Date	2021-06-11
First Named Inventor	Christopher M. SEATON
Art Unit	3636
Examiner Name	Danielle Jackson
Attorney Docket Number	12914-003C2

CERTIFICATION STATEMENT

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

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

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Robert L. Wolter/	Date (YYYY-MM-DD)	2022-01-11
Name/Print	Robert L. Wolter	Registration Number	36972

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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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)).

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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.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: SEATON, Christopher M. Group Art Unit: 3636

Serial No.: 17/345,981 Examiner: Jackson, Danielle

Filed: June 11, 2021 Conf. Number: 6659

Attorney Docket: 12914-003C2

For: CAMOUFLAGE MATERIAL FOR A HUNTING BLIND

RESPONSE UNDER 37 CFR 1.111

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Arlington, VA 22313-1450

In response to the Office Action dated February 24, 2022, Applicant respectfully submits the following amendment and arguments in connection with the above-identified application. The following are provided herewith:

Claim Amendments, and

Remarks.

IN THE CLAIMS

1. (currently amended) A camouflage structure comprising:

a pop-up frame including a plurality of flexible frame members, said plurality of flexible frame members comprising at least two spaced apart frame members along a side of the frame and at least two spaced apart frame members along a roof of the frame; and

one or more panels of mesh material of interwoven fabric configured to be attached between the at least two spaced apart frame members that are along the side of the frame, said one or more panels comprising:

a first side with a camouflage pattern; and

a second side with a dark color coating, said second side opposite to the first side; and

one or more panels of non-mesh material provided along a roof of the camouflage structure and configured to be attached to the at least two spaced apart ~~one or more of the flexible~~ frame members that are along the roof of the frame ~~and~~ to cover ~~the~~ an area between the at least two spaced apart frame members; ~~and~~

wherein the one or more panels of the mesh material define an outer surface of the camouflage structure; and

wherein the one or more panels of non-mesh material are non-transmissive such that incident radiation from an exterior of the camouflage structure is not transmitted through the non-mesh material.

2. (previously presented) The camouflage structure of claim 1, wherein the camouflage pattern comprises one or more ink substances printed on the first side and the dark color coating comprises a second ink substance printed on the second side.

3. (original) The camouflage structure of claim 1, wherein the camouflage pattern is based on an exterior environment where the camouflage structure will be positioned to make the camouflage structure blend in with the exterior environment.

4. (previously presented) The camouflage structure of claim 1, wherein the dark color coating comprises a single color coating.

5. (previously presented) The camouflage structure of claim 1, wherein the mesh material is partially transmissive such that a portion of incident radiation from an exterior of the camouflage structure is reflected off the camouflage pattern back into the exterior, a portion of incident radiation from an interior of the camouflage structure is transmitted through the mesh material to the exterior and wherein a ratio of an intensity of the reflected portion to an intensity of the transmitted portion is above a threshold value such that an exterior of the camouflage structure is visible through the camouflage material from the interior of the camouflage structure and the interior of the camouflage structure is not visible through the mesh material from the exterior of the camouflage structure;

and wherein the threshold value is 2.

6. (previously presented) The camouflage structure of claim 1, wherein a first side of the camouflage structure includes a window that can be opened to provide a shooting position upon the approach of prey from the first side.

7. (original) The camouflage structure of claim 1, wherein the mesh material is made of polyester material and an acrylic fiber.

8. (original) The mesh material of claim 1, wherein the mesh material is a vinyl-coated polyester material.

9. (original) The mesh material of claim 1, wherein the mesh material is formed by weaving yarn material.

10. (currently amended) TheA camouflage structure of claim 1, ~~comprising:~~

~~a pop-up frame including a plurality of flexible frame members, said plurality of flexible frame members comprising at least two spaced apart frame members; and~~

~~one or more panels of mesh material of interwoven fabric for the camouflage structure, said one or more panels configured to be attached between the at least two spaced apart frame members, said one or more panels comprising;~~

~~a first side with a camouflage pattern; and~~

~~a second side with a single dark color coating, said second side opposite to the first side; and~~

~~one or more panels of non-mesh material provided along a roof of the camouflage structure and attached to one or more of the flexible frame members;~~

wherein the mesh material is partially transmissive such that a portion of incident radiation from an exterior of the camouflage structure is reflected off the camouflage pattern back into the exterior, a portion of incident radiation from an interior of the camouflage structure is transmitted through the mesh material to the exterior and wherein a ratio of an intensity of the reflected portion to an intensity of the transmitted portion is above a threshold value such that an exterior of the camouflage structure is visible through the camouflage material from the interior of the camouflage structure and the interior of the camouflage structure is not visible through the mesh material from the exterior of the camouflage structure;

and wherein the threshold value is 1.

11. (previously presented) The camouflage structure of claim 1, wherein the mesh material is produced by;

printing the camouflage pattern on the first side of the mesh material using a first ink, and

printing the dark color coating on the second side of the mesh material using a second ink.

12. (previously presented) The camouflage structure of claim 6, wherein a second side of the camouflage structure includes a window that can be opened to provide a shooting position upon the approach of prey from the second side.

13. (previously presented) The camouflage structure of claim 1, wherein the second side of the one or more panels of the mesh material defines an interior of the camouflage structure and the first side of the one or more panels of the mesh material defines an exterior of the camouflage structure; and

wherein the plurality of frame members are configured to form an enclosure that surrounds the interior.

14. (previously presented) The camouflage structure of claim 13, wherein the one or more panels of mesh material provide a 360 degree view of the exterior of the camouflage structure from the interior of the camouflage structure.

15. (previously presented) The camouflage structure of claim 1, wherein flexible frame members along a side of the camouflage structure are interconnected with the one or more panels of non-mesh material along the roof of the camouflage structure.

16. (canceled)

17. (previously presented) The camouflage structure of claim 15, wherein the pop-up frame is movable from a folded position to a deployed position.

18. (currently amended) The camouflage structure of claim 17, wherein the one or more panels of mesh material are secured between the flexible frame members in the folded position such that when the frame is moved from the folded position to the deployed position an exterior of the camouflage structure is visible through the one or more panels of mesh material from an interior of the camouflage structure yet the

interior of the camouflage structure is not visible through the one or more panels of mesh material from the exterior of the camouflage structure.

19. (original) The camouflage structure of claim 1, wherein the frame members have a variation in the spacing between the spaced apart frame members.

20. (currently amended) A camouflage structure comprising:

a pop-up frame including a plurality of flexible frame members, said plurality of flexible frame members comprising at least two spaced apart frame members along a side of the frame and at least two spaced apart frame members along a roof of the frame; and

one or more panels of mesh material of interwoven fabric configured to be attached between the at least two spaced apart frame members that are along the side of the frame, said one or more panels comprising:

a first side with a camouflage pattern; and

a second side with a dark color coating, said second side opposite to the first side; and

one or more panels of non-mesh material configured to be provided along a roof of the camouflage structure and configured to be attached to the at least two spaced apart frame members that are along the roof of the frame to cover an area between the at least two spaced apart frame members;

wherein the one or more panels of the mesh material define an outer surface of the camouflage structure;

~~The camouflage structure of claim 1,~~

wherein the camouflage pattern is based on an exterior environment where the camouflage structure will be positioned to make the camouflage structure blend in with the exterior environment;

wherein the one or more panels of non-mesh material are non-transmissive such that incident radiation from an exterior of the camouflage structure is not transmitted through the non-mesh material;

wherein the camouflage structure includes a window along a first side of the camouflage structure that can be opened to provide a shooting position upon the approach of prey from the first side;

wherein the pop-up frame is movable from a folded position to a deployed position; and

wherein the one or more panels of mesh material are secured between the at least two spaced apart flexible frame members along the side of the frame in the folded position such that when the frame is moved from the folded position to the deployed position an exterior of the camouflage structure is visible through the one or more panels of mesh material from an interior of the camouflage structure yet the interior of the camouflage structure is not visible through the one or more panels of mesh material from the exterior of the camouflage structure.

REMARKS

The Examiner is thanked for the thorough review of the present application. Claims 1, 10, 18 and 20 are amended. Claim 16 was canceled. No new claims were added. Thus, claims 1 – 15 and 17 - 20 are pending.

Independent claim 1 was amended to rewrite allowable dependent claim 16 into independent form and dependent claim 16 was canceled, for consistency therewith.

Independent claim 10 was amended into dependent form, to depend from independent claim 1.

Allowable dependent claim 20 was amended into independent form.

Accordingly, no new matter is presented by this amendment.

Response to Claim Objections

The Office Action objected to claim 1, lines 10 – 12 that recites "one or more panels…attached to one or more flexible frame members and cover the area" as being awkwardly worded (Office Action, p. 2). This language of claim 1 was amended to recite "one or more panels…attached to one or more flexible frame members to cover an area…" Thus, it is respectfully submitted that this wording has been corrected and the objection should be withdrawn.

The Office Action also objected to claim 1, line 12 that recites "the spaced apart frame members" which should be changed to "the at least two spaced apart frame members", (Office Action, p. 2). This language was amended, as helpfully suggested by the Examiner. Accordingly, it is respectfully submitted that this objection should be withdrawn.

The Office Action also objected to each instance of "the panels of mesh material" in claim 20 which should recite "the one or more panels of mesh material" (Office Action, p. 2). Applicant amended claim 20, as helpfully suggested by the Examiner, as well as claim 18 with this same issue. Accordingly, it is respectfully requested that these objections be withdrawn.

Response to Double Patenting Rejections

The Office Action were provisionally rejected claims 1 – 20 on the ground of nonstatutory double patenting based on copending application number 16/998,843. The Office Action also rejected claims 1- 20 on the ground of nonstatutory double patenting based on U.S. Patent number 10,765,108 B2 (Office Action, p. 4 - 5).

Applicant submitted an eTerminal Disclaimer for copending application number 16/998,843 and an eTerminal Disclaimer for U.S. Patent number 10,765,108 B2. Accordingly, it is respectfully submitted that these double patenting rejections be withdrawn.

Response to 35 USC 103 Rejections

Independent claim 1 was amended to rewrite allowable dependent claim 16 in independent form. Thus, it is respectfully submitted that the rejection of independent claim 1 be withdrawn and that amended independent claim 1 be allowed.

Dependent claims 2 – 15 and 17 – 19, which recite yet further distinguishing features, are also patentable, based on allowable independent claim 1.

Allowable dependent claim 20 was rewritten into independent form. Thus, it is respectfully requested that amended independent claim 20 be allowed.

Allowable Subject Matter

Applicant gratefully acknowledges the Office Action indication that claims 16 and 20 would be allowable if rewritten into independent form. As discussed herein, claim 1 was amended to rewrite allowable claim 16 into independent form. Additionally, allowable dependent claim 20 was rewritten into independent form.

Applicant respectfully submits that pending claims 1 – 15 and 17 – 20 are in condition for allowance. Should any further informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,

Date: March 3, 2022

/CIAN G. O'BRIEN/

Cian G. O'Brien
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Electronic Acknowledgement Receipt

EFS ID:	45130080
Application Number:	17345981
International Application Number:	
Confirmation Number:	6659
Title of Invention:	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND
First Named Inventor/Applicant Name:	Christopher M. SEATON
Customer Number:	151692
Filer:	Robert L. Wolter./Cynthia Nugent
Filer Authorized By:	Robert L. Wolter.
Attorney Docket Number:	12914-003C2
Receipt Date:	02-MAR-2022
Filing Date:	11-JUN-2021
Time Stamp:	17:21:27
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		12914003C2_20220302ResponseV1.pdf	51209 579fe1f448e10ecd71d7f6f78ac4c8849a6cdf39	yes	10

DBR Finance, Inc., Ex. 1006

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Request for Reconsideration-After Non-Final Rejection	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	10
Warnings:			
Information:			
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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.

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

New International Application Filed with the USPTO as a Receiving Office

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Doc Code: DIST.E.FILE **Document Description: Electronic Terminal Disclaimer - Filed**	PTO/SB/25 PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A PROVISIONAL DOUBLE PATENTING REJECTION OVER A PENDING "REFERENCE" APPLICATION AND TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT**
Application Number	17345981
Filing Date	11-Jun-2021
First Named Inventor	Christopher SEATON
Attorney Docket Number	12914-003C2
Title of Invention	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND

☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action

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Owner	Percent Interest
Rugged Cross Hunting Blinds LLC	100 %

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

16998843 filed on 08/20/2020

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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.

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- is found invalid by a court of competent jurisdiction;
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- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

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

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

Applicants claims the following fee status:

(●) Small Entity

( ) Micro Entity

( ) Regular Undiscounted

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES

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

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

Registration Number 36972

( ) 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	/Robert L. Wolter/
Name	Robert L. Wolter

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*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.

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Electronic Patent Application Fee Transmittal

Application Number:	17345981
Filing Date:	11-Jun-2021
Title of Invention:	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND
First Named Inventor/Applicant Name:	Christopher M. SEATON
Filer:	Robert L. Wolter./Cynthia Nugent
Attorney Docket Number:	12914-003C2

Filed as Small 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	2814	1	170	170
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

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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.: 17345981

Filing Date: 11-Jun-2021

Applicant/Patent under Reexamination: SEATON

Electronic Terminal Disclaimer filed on March 2, 2022

☒ 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:	45129231
Application Number:	17345981
International Application Number:	
Confirmation Number:	6659
Title of Invention:	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND
First Named Inventor/Applicant Name:	Christopher M. SEATON
Customer Number:	151692
Filer:	Robert L. Wolter./Cynthia Nugent
Filer Authorized By:	Robert L. Wolter.
Attorney Docket Number:	12914-003C2
Receipt Date:	02-MAR-2022
Filing Date:	11-JUN-2021
Time Stamp:	16:54:21
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$170
RAM confirmation Number	E202232G54151775
Deposit Account	
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Warnings:					
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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.

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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.

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PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/345,981	Filing Date 06/11/2021	☐ 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 $50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $240 =	
☐ 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	03/02/2022	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 19	Minus	** 20	= 0		x $50 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	*** 3	= 0		x $240 =	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".	/DAMALI AYANA BERRY/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

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

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/345,981	06/11/2021	Christopher M. SEATON	12914-003C2	6659

151692 7590 02/24/2022

Robert L. Wolter
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Orlando, FL 32810

EXAMINER
JACKSON, DANIELLE

ART UNIT	PAPER NUMBER
3636	

NOTIFICATION DATE	DELIVERY MODE
02/24/2022	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):

cnugent@savvyiplaw.com
patents@savvyiplaw.com
rwolter@savvyiplaw.com

Office Action Summary	Application No. 17/345,981	Applicant(s) SEATON et al.	
	Examiner DANIELLE JACKSON	Art Unit 3636	AIA (FITF) Status Yes

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

Period for Reply

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

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

Status

1)☑ Responsive to communication(s) filed on 11 January 2022.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

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

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

Disposition of Claims*

5) ☑ Claim(s) 1-20 is/are pending in the application.

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

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-20 is/are rejected.

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

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

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

Application Papers

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

11)☑ The drawing(s) filed on 11 June 2021 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 1/11/2021.

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

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

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

Claim Objections

Claims 1 and 20 are objected to because of the following informalities:

Claim 1, lines 10-12 "one or more panels…and cover the area" is awkwardly worded and should be amended.

Claim 1, line 12, "the spaced apart frame members" should be changed to --the at least two spaced apart frame members--.

Claim 20, each instance of "the panels of mesh material" should be changed to --the one or more panels of mesh material-- for consistency purposes.

Appropriate correction is required.

Double Patenting

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.

Claims 1-20 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-53 of copending Application No. 16/998,843 (reference application). Although the claims at issue are not identical, they are not patentably distinct from each other because they both recite a camouflage structure comprising: a frame having at least two spaced apart frame members' and one or more mesh panels including a first side with a camouflage pattern and a second side with a color coating, wherein the mesh material is partially transmissive so that the exterior of the structure is visible from the interior of the structure, but the interior is not visible from the exterior.

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

Claims 1-20 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 10,765,108 B2. Although the claims at issue are not identical, they are not patentably distinct from each other because they both recite a camouflage structure comprising: a frame having at least two spaced apart frame members and one or more mesh panels including a first side with a camouflage pattern and a second side with a color coating, wherein the mesh material is partially transmissive so that the exterior of the structure is visible from the interior of the structure, but the interior is not visible from the exterior.

Claim Rejections - 35 USC § 103

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

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 9-15, and 17-19 is/are rejected under 35 U.S.C. 103 as being unpatentable over Nagata (US-6,004,649) in view of Ransom et al. (US-7,040,333 B1).

Claim 1: Nagata teaches a structure (FIG. 3e) comprising: a frame (the tent inherently has some frame members in order to keep it in erect position); a panel of a mesh material (1) defining an interior of the camouflage structure (inside of tent seen in FIG. 3e); wherein the mesh material is interwoven fabric with a pattern (5; see FIG. 3e) printed on a first side (col. 3, lines 59-60) and a second side with a dark color coating (4; col. 3, lines 18-28), said second side opposite to the first side (as seen in FIG. 1); and one or more panels (27) of non-mesh material (transparent plastic sheet; col. 4, lines 23-25) provided along a roof of the structure (as seen in FIG. 3e) and attached to one or more of the frame (indirectly via the straps shown in FIG. 3e that connect to the structure); and wherein the panels of the mesh material define an outer surface of the camouflage structure (the panel of mesh material forms at least partially forms the outer surface of the structure even when the panel 27 is attached thereto).

While it appears that Nagata teaches a camouflage pattern in FIG. 3e, Nagata does not explicitly state the pattern to be a camouflage pattern. Additionally, Nagata is silent on the structure of the frame of the structure/tent. Ransom et al. teaches a

portable camouflage enclosure/blind comprising: a pop-up frame including a plurality of flexible frame members (12), said plurality of frame members comprising at least two spaced apart frame members (there are four frame members 12, each of which is spaced somewhat from and adjacent frame members, as seen in the figures), wherein a cover (15) covers the area between the spaced apart frame members (via portions 16, 24, 26 of cover 15). It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify Nagata to include a frame such as the frame of Ransom et al., to provide a collapsible, lightweight, yet structurally sound frame for the blind that can easily be erected on site. Ransom et al. further teaches using a camouflage pattern (30 or 42) on the tent. As such, it would also be obvious design change to modify Nagata to include a camouflage pattern as is common in the hunting blind art.

Claim 2: Nagata teaches the pattern as comprising one or more ink substance printed on the first side (col. 3, lines 59-60), but doesn't teach the dark color coating as being printed on the second side (it teaches the dark color coating as being sprayed onto the second side; col. 3, lines 58-59). However, it would have been obvious to one to ordinary skill in the art to have both sides be printed with ink since the first side is already printed with ink and it would make manufacturing the mesh material efficient if both sides used the same machine to produce the colors for both sides (possibly simultaneously). It would also ensure that both sides could withstand the same kinds of conditions and one would not degrade faster than the other.

Claim 3: The combination does not explicitly state the camouflage pattern being based on an exterior environment where the camouflage structure will be positioned;

however making the camouflage structure blend in with the surrounding environment is the purpose of camouflaging an object, thus ensuring it is not readily visible/distinctive from the surrounding environment, as evidenced by Ransom et al. which teaches different camouflage patterns depending on the environment, so making it match the specific environment it will be located in is obvious to one of ordinary skill in the art.

Claim 4: Nagata teaches the dark color coating as comprising a single dark color coating comprising at least one of a black color coating, a brown color coating, a grey color coating, a red color coating, a dark blue color coating, a dark purple color coating, a dark orange color coating and a dark yellow color coating (col. 3, lines 18-28; “black, dark blue, or dark gray”).

Claim 5: Nagata teaches the mesh material is partially transmissive (due to net holes 6) such that a portion of incident radiation from an exterior of the camouflage structure is reflected off the pattern back into the exterior, a portion of incident radiation from an interior of the camouflage structure is transmitted through the mesh material to the exterior and wherein a ratio of an intensity of the reflected portion to an intensity of the transmitted portion is above a threshold value such that an exterior of the structure is visible through the mesh material from the interior of the structure and the interior of the structure is not visible through the mesh material from the exterior of the structure (col. 2, lines 18-25; col. 4, lines 51-54); and wherein the threshold ratio value is 1 (the threshold value inherently must exceed 1 since the mesh material of Nagata is one-way, which means that the intensity of the light reflected to the exterior over the intensity of the light transmitted through the mesh material is great than 1 as more light is reflected back out into the exterior of the structure so the interior of the structure cannot be seen,

thus making it one-way). Additionally, it would be obvious to make the threshold value at least 2, if desired, as this would increase the one-way visibility properties and make it harder to see into the structure from the exterior.

Claims 6 and 12: Random et al. teaches a first side of the camouflage structure and a second side of the structure as each including a window (50) that can be opened to provide a shooting position (col. 4, lines 48-58) upon the approach of prey from the first and second sides, respectively.

Claim 9: Nagata teaches the mesh material to be formed by weaving yarn material (col. 2, lines 58-67, co. 3, lines 1-5, col. 3, lines 51-67, col. 4, lines 1-26).

Claim 10: Nagata teaches a structure (FIG. 3e) comprising: a frame (the tent inherently has some frame members in order to keep it in erect position); a panel of a mesh material (1) defining an interior of the structure (inside of tent seen in FIG. 3e); wherein the mesh material is interwoven fabric with a pattern (5; see FIG. 3e) printed on a first side (col. 3, lines 59-60) and a second side with a single dark color coating (4; col. 3, lines 18-28; “black, dark blue, or dark gray”), said second side opposite to the first side (as seen in FIG. 1); and one or more panels (27) of non-mesh material (transparent plastic sheet; col. 4, lines 23-25) provided along a roof of the structure (as seen in FIG. 3e) and attached to one or more of the frame (indirectly via the straps shown in FIG. 3e that connect to the structure); wherein the mesh material is partially transmissive (due to net holes 6) such that a portion of incident radiation from an exterior of the camouflage structure is reflected off the pattern back into the exterior, a portion of incident radiation from an interior of the camouflage structure is transmitted through the mesh material to the exterior and wherein a ratio of an intensity of the reflected portion to an intensity of

the transmitted portion is above a threshold value such that an exterior of the structure is visible through the mesh material from the interior of the structure and the interior of the structure is not visible through the mesh material from the exterior of the structure (col. 2, lines 18-25; col. 4, lines 51-54); and wherein the threshold ratio value is 1 (the threshold value inherently must exceed 1 since the mesh material of Nagata is one-way, which means that the intensity of the light reflected to the exterior over the intensity of the light transmitted through the mesh material is great than 1 as more light is reflected back out into the exterior of the structure so the interior of the structure cannot be seen, thus making it one-way).

While it appears that Nagata teaches a camouflage pattern in FIG. 3e, Nagata does not explicitly state the pattern to be a camouflage pattern. Additionally, Nagata is silent on the structure of the frame of the structure/tent. Ransom et al. teaches a portable camouflage enclosure/blind comprising: a pop-up frame including a plurality of flexible frame members (12), said plurality of frame members comprising at least two spaced apart frame members (any of the two members 12 opposite one another, since there are four frame members 12, two frame members are always spaced from each other). It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify Nagata to include a frame such as the frame of Ransom et al., to provide a collapsible, lightweight, yet structurally sound frame for the blind that can easily be erected on site. Ransom et al. further teaches using a camouflage pattern (30 or 42) on the tent. As such, it would also be obvious design change to modify Nagata to include a camouflage pattern as is common in the hunting blind art.

Claim 11: Nagata teaches the mesh material to be produced by: printing the pattern on the first side using a first ink (col. 3, lines 59-60), but doesn't teach the single dark color coating as being printed on the second side using a second ink (teaches the single color coating as being sprayed onto the second side; col. 3, lines 58-59). However, it would have been obvious to one to ordinary skill in the art to have both sides be printed with ink since the first side is already printed with ink and it would make manufacturing the mesh material efficient if both sides used the same machine to produce the colors for both sides (possibly simultaneously). It would also ensure that both sides could withstand the same kinds of conditions and one would not degrade faster than the other.

Claim 13: Nagata teaches the second side of the one or more panels of the mesh material as defining an interior of the structure and the first side of the one or more panels of the mesh material as defining an exterior of the structure (since Nagata only teaches the material as being one layer, the second side would define the interior and the first side would define the exterior), and wherein the plurality of frame members are configured to form an enclosure that surrounds the interior (as seen in FIG. 3e of Nagata or FIGS. 1-4 and 14-15 of Reis et al.).

Claim 14: Nagata teaches the one or more panels of mesh material as providing a 360 degree view of the exterior of the camouflage structure from the interior of the camouflage structure (as seen in FIG. 3e of Nagata, the mesh material is used on all sides of the frame/structure, therefore creating a 360 degree view of the exterior from the interior).

Claim 15: Ransom et al. teaches wherein flexible frame members along a side of the camouflage structure as being interconnected with the one or more panels of non-mesh material along the roof of the camouflage structure (the non-mesh material 27 has straps that interconnect with sides/lower corners of the structure which are interconnected with the flexible frame members of the sides of the structures, i.e. each side 16/24 of the structure includes a frame 12 and the straps would connect to 16/24).

Claim 17: Ransom et al. teaches the pop-up frame as being movable from a folded position (FIG. 14) to a deployed position (FIG. 6).

Claim 18: Nagata teaches that when the structure is in the deployed position, an exterior of the structure as being visible through the panels of mesh material from an interior of the structure yet the interior of the camouflage structure is not visible through the panels of mesh material from the exterior of the camouflage structure. Since Ransom et al. teaches the panels of the cover (15) as being secured between the flexible frame members in the folded position (as seen in FIGS. 8-14), if Nagata was modified to comprise the flexible frame members of Ransom et al., then the panel of mesh material would also be secured and folded as such.

Reis et al. teaches the frame as being a pop-up frame and the frame members are flexible (col. 8, lines 12-13; or col. 13, lines 64-65).

Claim 19: Ransom et al. teaches the frame members as having a variation in spacing between the spaced apart frame members (some of the frame members 12 are spaced apart by a greater distance than they are spaced apart from other frame members, i.e. there is a variation in the spacing between one frame member and a frame member directly adjacent it and another frame member across the tent from it).

Claim 7 is/are rejected under 35 U.S.C. 103 as being unpatentable over Nagata (US-6,004,649) in view of Ransom et al. (US-7,040,333 B1) as applied to claim 1 above, and further in view of Tabei et al. (JP-H09321485 A).

The combination is discussed above and Nagata teaches the mesh material to be made of polyester (col. 4, lines 12-13) but lacks acrylic fibers. Tabei et al. teaches a sheet comprising a mesh material made of polyester material and an acrylic fiber that is then coated (English translation of the specification; "A metal film is formed by applying a conductive treatment to a woven cloth formed by weaving 10 μm polyester, nylon, and acrylic fiber threads into a mesh structure of 14 to 580 mesh / inch"). It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify the combination to include a polyester material with acrylic fibers, such as that taught by Tabei et al., as an alternative that would provide a strong material less prone to tearing.

Claim 8 is/are rejected under 35 U.S.C. 103 as being unpatentable over Nagata (US-6,004,649) in view of Ransom et al. (US-7,040,333 B1) as applied to claim 1 above, and further in view of Meadows (US-2008/005987 A1).

The combination is discussed above and Nagata teaches the mesh material to be made of polyester (col. 4, lines 12-13) but lacks a vinyl-coated polyester material. Meadows teaches an ornamental screen comprising a mesh material made of vinyl-coated polyester material (paragraph 68). It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify

the combination to include a vinyl-coated polyester material, such as taught by Meadows, as an alternative that would provide a strong material less prone to tearing.

Allowable Subject Matter

Claims 16 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Nagata teaches the one or more non-mesh panels as being transmissive, and therefore lacks the non-mesh panels being non-transmissive such that incident radiation from an exterior of the structure is not transmitted through the non-mesh material. It would not have been obvious to make the non-mesh panels of Nagata non-transmissive.

Response to Arguments

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

Regarding Applicant's argument that Nagata fails to teach the panels of mesh material as defining the outer surface of the structure due to the transparent plastic

sheet that "covers" the structure (first alternate basis argument, page 16 of Remarks), the Examiner notes that the plastic sheet does not cover the entirety of the structure and therefore a portion of the mesh materials forms a portion of the outer surface of the structure.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIELLE JACKSON whose telephone number is (571)272-2268. The examiner can normally be reached M-F: 11AM-7PM EST.

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, David Dunn can be reached on (571)272-6670. 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.

/DNJ/
Examiner, Art Unit 3636

/DAVID R DUNN/
Supervisory Patent Examiner, Art Unit 3636

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/345,981	SEATON et al.
	Examiner	Art Unit
	DANIELLE JACKSON	3636

✓	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	11/05/2021	02/17/2022							
	1	✓	✓							
	2	✓	✓							
	3	✓	✓							
	4	✓	✓							
	5	✓	✓							
	6	✓	✓							
	7	✓	✓							
	8	✓	✓							
	9	✓	✓							
	10	✓	✓							
	11	✓	✓							
	12	✓	✓							
	13	✓	✓							
	14	✓	✓							
	15	✓	✓							
	16	✓	✓							
	17	✓	✓							
	18	✓	✓							
	19	✓	✓							
	20	✓	✓							

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/345,981	SEATON et al.
	Examiner	Art Unit
	DANIELLE JACKSON	3636

CPC - Searched*		
Symbol	Date	Examiner
F41H 3/02	03/02/2019	DNJ
Updated above search of parent App. No. 15/444,909	11/06/2021	DNJ
Updated above	02/17/2022	DNJ

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

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

Search Notes		
Search Notes	Date	Examiner
Search - see attached	11/06/2021	DNJ
PALM - Inventor Search	11/06/2021	DNJ
Search - see attached	02/17/2022	DNJ

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

/DNJ/ Examiner, Art Unit 3636	

DBR Finance, Inc., Ex. 1006

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	9	("6919130" "4443516").pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/02/17 11:32 PM
L2	2228	F41H3/02.cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/02/17 11:38 PM
L3	5	L2 AND @pd>="20211101"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/02/17 11:42 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

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

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17345981
Filing Date	2021-06-11
First Named Inventor	Christopher M. SEATON
Art Unit	3636
Examiner Name	Danielle Jackson
Attorney Docket Number	12914-003C2

U.S.PATENTS Remove

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	6919130	B2	2005-07-19	Tokarsky et al.	
	2	4443516	A	1984-04-17	Rogers	

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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]
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Application Number	17345981
	Filing Date	2021-06-11
	First Named Inventor	Christopher M. SEATON
	Art Unit	3636
	Examiner Name	Danielle Jackson
	Attorney Docket Number	12914-003C2

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	CHILTON, Tensile structures – textiles for architecture and design, Textiles, Polymers and Composites for Buildings, Woodhead Publishing Series in Textiles: Number 95, 2010, 229-257, Woodhead Publishing Limited, UK	
	2	Saatifil Polyester Technical Data Sheet, SAATI S.p.A, Italy	

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EXAMINER SIGNATURE

Examiner Signature	/DANIELLE JACKSON/	Date Considered	02/17/2022

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[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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	Art Unit	3636
	Examiner Name	Danielle Jackson
	Attorney Docket Number	12914-003C2

CERTIFICATION STATEMENT

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

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

OR

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See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Robert L. Wolter/	Date (YYYY-MM-DD)	2022-01-11
Name/Print	Robert L. Wolter	Registration Number	36972

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

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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.

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Application Number	17345981
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First Named Inventor	Christopher M. SEATON
Art Unit	3636
Examiner Name	Danielle Jackson
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	Examiner Name	Danielle Jackson
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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	CHILTON, Tensile structures – textiles for architecture and design, Textiles, Polymers and Composites for Buildings, Woodhead Publishing Series in Textiles: Number 95, 2010, 229-257, Woodhead Publishing Limited, UK	
	2	Saatifil Polyester Technical Data Sheet, SAATI S.p.A, Italy	

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Electronic Acknowledgement Receipt

EFS ID:	44719601
Application Number:	17345981
International Application Number:	
Confirmation Number:	6659
Title of Invention:	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND
First Named Inventor/Applicant Name:	Christopher M. SEATON
Customer Number:	151692
Filer:	Robert L. Wolter./Cynthia Nugent
Filer Authorized By:	Robert L. Wolter.
Attorney Docket Number:	12914-003C2
Receipt Date:	11-JAN-2022
Filing Date:	11-JUN-2021
Time Stamp:	16:04:01
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		12914003C2_20220110ResponseV2.pdf	319303 08d29d2ab02c543c951eb79108a363b752f15a77	yes	21

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	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Specification	2	2
	Claims	3	8
	Applicant Arguments/Remarks Made in an Amendment	9	21

Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	12914003C2_SIDS_2.pdf	1034587 acec487b6fd4d75952d3ecbf2adefe5e0b01917a	no	4
Warnings:					
Information:					
3	Non Patent Literature	Chilton.pdf	1809137 97d3a19aba496ba8e2cfd27a47b58ff0eea9fada	no	40
Warnings:					
Information:					
4	Non Patent Literature	Saatfil.pdf	337369 b35af1bd94eae20673f3ffcd5fc47f8ee8ec5191	no	2
Warnings:					
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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.

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

New International Application Filed with the USPTO as a Receiving Office

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: SEATON, Christopher M. Group Art Unit: 3636

Serial No.: 17/345,981 Examiner: Jackson, Danielle

Filed: June 11, 2021 Conf. Number: 6659

Attorney Docket: 12914-003C2

For: CAMOUFLAGE MATERIAL FOR A HUNTING BLIND

RESPONSE UNDER 37 CFR 1.111

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Arlington, VA 22313-1450

In response to the Office Action dated November 12, 2021, Applicant respectfully submits the following amendment and arguments in connection with the above-identified application. The following are provided herewith:

Specification Amendment,
Claim Amendments, and
Remarks.

IN THE SPECIFICATION

Please replace paragraph [0032] on pages 9 – 10 of the Original Specification with the following amended paragraph:

[0032] FIG. 2 is a side view of a first side 32 of a hunting blind 10 in accordance with aspects of embodiments of the invention. The hunting blind 10 includes a frame 12 with one or more frame members, such as aluminum extruded members 14, 16 that are interconnected together. In an example embodiment, the aluminum extruded member 14 is a 2" x 2" closed hollow member and the aluminum extruded member 16 is a 1" x 2" open back member. FIG. 3A is a perspective view of an open back extruded aluminum member 16 that forms the frame 12 of the hunting blind 10 of FIG. 2. As shown in FIG. 3A, the extruded aluminum member 16 includes one spline groove 18 to receive a spline, as discussed below. FIG. 3B is a perspective view of a hollow extruded aluminum member 14 that forms the frame 12 of the hunting blind 10 of FIG. 2. As shown in FIG. 3B, the extruded aluminum member 14 includes a pair of spline grooves [[18']]18 to receive respective splines, as discussed below. In an example embodiment, 3" bronze sheet screws are internally screwed to attach interconnecting extruded members 14, 16. In an example embodiment, 10 ¾" text screws are used to attach clips in interconnected areas of the extruded members 14, 16 that are not internally screwed together.

IN THE CLAIMS

1. (currently amended) A camouflage structure comprising:

a pop-up frame including a plurality of flexible frame members, said plurality of flexible frame members comprising at least two spaced apart frame members; and

one or more panels of mesh material of interwoven fabric configured to be attached between the at least two spaced apart frame members, said one or more panels comprising:;

a first side with a camouflage pattern; and

a second side with a dark color coating, said second side opposite to the first side; and

one or more panels of non-mesh material provided along a roof of the camouflage structure and attached to one or more of the flexible frame members and cover the area between the spaced apart frame members; and

wherein the panels of the mesh material define an outer surface of the camouflage structure.

2. (currently amended) The camouflage structure of claim 1, wherein the camouflage pattern comprises one or more ink substances printed on the first side and the dark color coating comprises a second ink substance printed on the second side.

3. (original) The camouflage structure of claim 1, wherein the camouflage pattern is based on an exterior environment where the camouflage structure will be positioned to make the camouflage structure blend in with the exterior environment.

4. (currently amended) The camouflage structure of claim 1, wherein the dark color coating comprises a single color coating.

5. (currently amended) The camouflage structure of claim ~~4, wherein the single color coating is a dark color coating.~~1, wherein the mesh material is partially transmissive such that a portion of incident radiation from an exterior of the camouflage

structure is reflected off the camouflage pattern back into the exterior, a portion of incident radiation from an interior of the camouflage structure is transmitted through the mesh material to the exterior and wherein a ratio of an intensity of the reflected portion to an intensity of the transmitted portion is above a threshold value such that an exterior of the camouflage structure is visible through the camouflage material from the interior of the camouflage structure and the interior of the camouflage structure is not visible through the mesh material from the exterior of the camouflage structure;

and wherein the threshold value is 2.

6. (currently amended) The camouflage structure of claim ~~5, wherein the dark color coating comprises at least one of a black color coating, a brown color coating, a grey color coating, a red color coating, a dark blue color coating, a dark purple color coating, a dark orange color coating and a dark yellow color coating.~~ 1, wherein a first side of the camouflage structure includes a window that can be opened to provide a shooting position upon the approach of prey from the first side.

7. (original) The camouflage structure of claim 1, wherein the mesh material is made of polyester material and an acrylic fiber.

8. (original) The mesh material of claim 1, wherein the mesh material is a vinyl-coated polyester material.

9. (original) The mesh material of claim 1, wherein the mesh material is formed by weaving yarn material.

10. (currently amended) A camouflage structure comprising:

a pop-up frame including a plurality of flexible frame members, said plurality of flexible frame members comprising at least two spaced apart frame members; and

one or more panels of mesh material of interwoven fabric for the camouflage structure, said one or more panels configured to be attached between the at least two spaced apart frame members, said one or more panels comprising;

a first side with a camouflage pattern; and

a second side with a single dark color coating, said second side opposite to the first side; and

one or more panels of non-mesh material provided along a roof of the camouflage structure and attached to one or more of the flexible frame members;

wherein the mesh material is partially transmissive such that a portion of incident radiation from an exterior of the camouflage structure is reflected off the camouflage pattern back into the exterior, a portion of incident radiation from an interior of the camouflage structure is transmitted through the mesh material to the exterior and wherein a ratio of an intensity of the reflected portion to an intensity of the transmitted portion is above a threshold value such that an exterior of the camouflage structure is visible through the camouflage material from the interior of the camouflage structure and the interior of the camouflage structure is not visible through the mesh material from the exterior of the camouflage structure;

and wherein the threshold value is 1.

11. (currently amended) The camouflage structure of claim 1, wherein the mesh material is produced by;

printing the camouflage pattern on the first side of the mesh material using a first ink, and

printing the ~~color coating including a single~~ dark color coating on the second side of the mesh material using a second ink.

12. (currently amended) The camouflage structure of claim ~~1, wherein the panels of the mesh material define an outer surface of the camouflage structure~~6, wherein a second side of the camouflage structure includes a window that can be opened to provide a shooting position upon the approach of prey from the second side.

13. (currently amended) The camouflage structure of claim 1, wherein the second side of the one or more panels of the mesh material defines an interior of the camouflage structure and the first side of the one or more panels of the mesh material defines an exterior of the camouflage structure; and

wherein the plurality of frame members are configured to form an enclosure that surrounds the interior.

14. (currently amended) The camouflage structure of claim 13, wherein the one or more panels of mesh material provide a 360 degree view of the exterior of the camouflage structure from the interior of the camouflage structure.

15. (currently amended) The camouflage structure of claim ~~1, further comprising one or more panels of non-mesh material configured to be attached to the frame members and cover the area between the spaced apart frame members.~~1, wherein flexible frame members along a side of the camouflage structure are interconnected with the one or more panels of non-mesh material along the roof of the camouflage structure.

16. (currently amended) The camouflage structure of claim ~~15~~1, wherein the one or more panels of non-mesh material are non-transmissive such that incident radiation from an exterior of the camouflage structure is not transmitted through the non-mesh material.

17. (currently amended) The camouflage structure of claim 15~~, wherein the one or more panels of non-mesh material cover the area between the spaced apart frame members along a roof of the camouflage structure~~, wherein the pop-up frame is movable from a folded position to a deployed position.

18. (currently amended) The camouflage structure of claim ~~1, wherein the frame is a pop-up frame including a plurality of flexible frame members.~~17, wherein the panels of mesh material are secured between the flexible frame members in the folded position such that when the frame is moved from the folded position to the deployed position an exterior of the camouflage structure is visible through the panels of mesh material from an interior of the camouflage structure yet the interior of the camouflage structure is not visible through the panels of mesh material from the exterior of the camouflage structure.

19. (original) The camouflage structure of claim 1, wherein the frame members have a variation in the spacing between the spaced apart frame members.

20. (currently amended) The camouflage structure of claim 1, ~~further comprising one or more panels of non-mesh material configured to be attached to the frame members and cover the area between the spaced apart frame members;~~

~~wherein the frame is a pop-up frame including a plurality of flexible frame members;~~

~~wherein the second side of the mesh material is coated with a dark color coating; and~~

~~wherein the panels of the mesh material define an outer surface of the camouflage structure~~.

wherein the camouflage pattern is based on an exterior environment where the camouflage structure will be positioned to make the camouflage structure blend in with the exterior environment;

wherein the one or more panels of non-mesh material are non-transmissive such that incident radiation from an exterior of the camouflage structure is not transmitted through the non-mesh material;

wherein the camouflage structure includes a window along a first side of the camouflage structure that can be opened to provide a shooting position upon the approach of prey from the first side;

wherein the pop-up frame is movable from a folded position to a deployed position; and

wherein the panels of mesh material are secured between the flexible frame members in the folded position such that when the frame is moved from the folded position to the deployed position an exterior of the camouflage structure is visible through the panels of mesh material from an interior of the camouflage structure yet the interior of the camouflage structure is not visible through the panels of mesh material from the exterior of the camouflage structure.

REMARKS

The Examiner is thanked for the thorough review of the present application. Claims 1, 2, 4 - 6, 10 – 18 and 20 are amended. No claims were canceled. No new claims were added. Thus, claims 1 - 20 are pending.

Independent claim 1 was amended to rewrite dependent claim 20 into independent form. Independent claim 1 was further amended to recite language from dependent claim 17, namely that the one or more panels of non-mesh material are provided along a roof of the camouflage structure. Independent claim 10 was amended in a similar manner as independent claim 1.

Dependent claim 5 was amended to recite language from independent claim 10, namely that a ratio of an intensity of the reflected portion to an intensity of the transmitted portion is above a threshold value. Dependent claim 5 was further amended to recite that the threshold value is 2. Support for this amendment may be found in paragraph [0024] of the Original Specification, for example.

Dependent claim 6 was amended to recite that a first side of the camouflage structure includes a window that can be opened to provide a shooting position upon the approach of prey from the first side. Support for this amendment may be found in paragraph [0035] of the Original Specification, for example.

Dependent claim 12 was amended to recite that a second side of the camouflage structure includes a window that can be opened to provide a shooting position upon the approach of prey from the second side. Support for this amendment may be found in paragraph [0035] of the Original Specification, for example.

Dependent claim 15 was amended to recite that flexible frame members along a side of the camouflage structure are interconnected with the one or more panels of non-mesh material along the roof of the camouflage structure. Support for this amendment may be found in paragraph [0034] of the Original Specification, for example.

Dependent claim 17 was amended to recite that the pop-up frame is movable from a folded position to a deployed position. Support for this amendment may be found in paragraph [0039] of the Original Specification, for example.

Dependent claim 18 was amended to recite that the panels of mesh material are secured between the flexible frame members in the folded position such that when the frame is moved from the folded position to the deployed position an exterior of the camouflage structure is visible through the panels of mesh material from an interior of the camouflage structure yet the interior of the camouflage structure is not visible through the panels of mesh material from the exterior of the camouflage structure. Support for this amendment may be found in paragraph [0039] of the Original Specification, for example.

Dependent claim 20 was amended to recite language from dependent claim 3, dependent claim 16, amended dependent claim 6 and amended dependent claim 18.

Accordingly, no new matter is presented by this amendment.

Interview Summary

Per MPEP 713.04, Applicant hereby provides a written summary of a telephone interview conducted 18 November 2021 between the Applicant (represented by Cian O'Brien), Examiner Jackson and Examiner Dunn. During the telephone interview, the rejection of dependent claim 20 was discussed (a proposed amendment was presented rewriting dependent claim 20 into independent form). The Applicant pointed out that claim 32 in the parent application (U.S. Application No. 15/444,909, hereafter "the parent application") was allowed over the same cited references (Nagata and Reis) used to reject claim 20 in the present application. The Applicant cited to a Response filed on April 30 2020 in the parent application, where the Applicant argued that neither Nagata nor Reis disclose the language of claim 32 including:

(A) one of panels of non-mesh material provided along a roof of the camouflage structure and attached to flexible frame members of a pop-up frame; and

(B) a plurality of panels of mesh material defining an outer surface of the camouflage structure and attached to flexible frame members of a pop-up frame. (April 30 2020 Response, p. 15 – 17)

The Applicant then cited to the May 2020 Office Action where Examiner Jackson explicitly found this argument "persuasive" that neither Nagata nor Reis discloses the above language of (A) and (B) and allowed claim 32 (May 2020 Office Action, p. 13).

The Applicant then argued that claim 20 in the present application should be similarly allowed over Nagata and Reis, since claim 20 recited the same language of (A) and (B) above from claim 32 in the present application, with the only distinction being that claim 32 further recites that the panels of non-mesh material are "provided along a roof of the camouflage structure". Applicant indicated a willingness to further recite claim 20 with this language.

In response to these arguments, Examiner Jackson argued that claim 32 in the parent application was not allowed for reciting the language in (A) and (B) above that distinguished over Nagata and Reis, but instead argued that claim 32 was allowed for reciting an airflow between 30% and 40%. The Applicant responded that this is not consistent with the record, including arguments in the 30 April 2020 Response, which explicitly argued that neither Nagata nor Reis disclose (A) and (B) above in claim 32 and

the May 2020 Office Action which expressly found this particular argument "persuasive" and even cited to the same pages of this argument ("Applicant's arguments, see pages 15 – 17 (labeled in Remarks), filed 4/30/2020, with respect to claim 32 have been fully considered and are persuasive" May 2020 Office Action, p. 13). Examiner Jackson indicated she would need to fully review the record of the parent application before deciding on this issue and welcomed the Applicant to make these arguments in the next Response.

The Applicant also argued that Nagata emphasizes that lack of air permeability is a problem with conventional tents which needs to be overcome. The Applicant then pointed out one of ordinary skill in the art would not find it obvious to expressly ignore this stated purpose in Nagata and proceed to modify the tent of Nagata by replacing mesh panels with non-mesh panels, thereby reducing the air permeability of the tent. Thus, the proposed modification of Nagata would undermine the stated purpose in Nagata. The Examiner did not provide a response to this argument.

The Applicant pointed out that neither Nagata nor Reis disclose panels of mesh material defining an outer surface of the structure, as recited in claim 20. Nagata teaches a clear plastic sheet (not a panel of mesh material) placed over the tent. Reis discloses a 3D leaf cutout cover (also not a panel of mesh material) placed over the structure. The Examiner did not provide a response to this argument.

The Applicant also pointed out that Nagata discusses tents in the context of changing clothes, sunbathing, etc. There is no teaching or suggestion in Nagata to use the tent for hunting. Thus, one of ordinary skill in the art would not find it obvious to modify the tent of Nagata based on a hunting blind in Reis with structural features specific to hunting. The Examiner disagreed with this argument.

The Applicant also pointed out that even if one of ordinary skill in the art did find it obvious to modify Nagata in view of Reis, the rejection makes no mention of what specific steps would be taken. Would one of ordinary skill in the art find it obvious to modify the tent of Nagata based on the bi-layer cover 20 of Reis (inner layer 23 and outer layer 21)? Or would one of ordinary skill in the art find it obvious to modify the tent of Nagata based on only one of the outer layer 21 or inner layer 23? Why? Examiner Dunn argued that

one of ordinary skill in the art would find it obvious to modify the tent of Nagata with only the inner layer 23 of Reis, not the outer layer 21. However, no rational argument was provided as to how or why this specific modification would be obvious rather than, say, modifying the tent of Nagata based on the bi-layer cover 20 (inner layer 23 and outer layer 21).

Response to Specification Objections

The Office Action objected to the Specification based on an informality (Office Action, p. 2). This portion of the Specification has been amended, as helpfully suggested by the Examiner. Accordingly, it is respectfully requested that this objection be withdrawn.

Response to Claim Objections

The Office Action objected to various claims based on certain informalities (Office Action, p. 2 - 3). These claims have been amended, as helpfully suggested by the Examiner. Accordingly, it is respectfully requested that these objections be withdrawn.

Response to Double Patenting Rejections

The Office Action rejected claims 1 – 20 on the ground of nonstatutory double patenting based on copending application number 16/998,843 and U.S. Patent number 10,765,108 B2 (Office Action, p. 4 - 5). Applicant respectfully requests that these rejections be held in abeyance pending a decision on the patentability of the claims of the pending application.

Response to 35 USC 103 Rejections

Primary Basis to overcome the rejection of Independent Claim 1

Independent claim 1 was amended to rewrite dependent claim 20 into independent form. Independent claim 1 was further amended to recite language from dependent claim 17, namely that the one or more panels of non-mesh material are provided along a roof of the camouflage structure.

Amended independent claim 1 recites similar language as claim 32 in the parent application that was held as not disclosed in Nagata or Reis. Below is an excerpt from pages 15 -17 of the April 2020 Response filed in the parent application:

> Rejection of Independent claim 32
>
> Independent claim 32 has been amended to recite:
>
> (A) one of panels of non-mesh material provided along a roof of the camouflage structure and attached to flexible frame members of a pop-up frame; and
>
> (B) a plurality of panels of mesh material defining an outer surface of the camouflage structure and attached to flexible frame members of a pop-up frame.
>
> None of the cited references teach (A) and (B) above. Nagata fails to teach (A) and instead teaches that the tent (including the roof) of FIG 3e is made from the mesh material. Additionally, Nagata fails to teach (A) and (B) since the Final Office Action conceded that Nagata does not teach flexible frame members of a pop-up frame (Final Office Action, p. 7).
>
> Reis fails to teach (B) since Reis teaches a cover 20 (see FIG 1A below) with an outer layer 21 that defines three dimensional partial cutouts 26 (see FIG. 1B below). This outer layer 21 is then placed over an inner layer 23 (FIG. 4) with an upper portion 25 and lower portion 27 ("The cover 20 is shown in FIG 4 with the outer layer 21 deleted for purpose of illustrating the configuration of the inner layer 23", col. 5 lines 60-63). Thus, Reis fails to teach that mesh (upper portion 25) defines an outer surface of the enclosure 10, as required by (B) above. In fact, Reis expressly teaches away from modifying the enclosure 10, to remove the outer cover 20 since the outer cover 20 renders Reis satisfactory for its intended purpose (i.e. to provide a three dimensional camouflage structure, based on the partial cut outs 26 of the outer cover 20, see col. 5 lines 37-50).
>
> »

The Examiner then explicitly found this argument "persuasive" and thus agreed that neither (A) nor (B) is disclosed in Nagata or Reis. Below is an excerpt from the May 2020 Office Action in the parent application:

> ***Response to Arguments***
>
> Applicant's arguments with respect to claims 1, 23 and 39 have been considered but are moot because the arguments do not apply to the combination of references being used in the current rejection. Specifically, it is noted that Nagata is not being relied upon for teaching an airflow between 30% and 40% or a camouflage pattern.
>
> Applicant's arguments, see pages 15-17 (labeled in Remarks), filed 4/30/2020, with respect to claim 32 have been fully considered and are persuasive. The rejection of claims 32-38 and 44-46 has been withdrawn.

Since amended independent claim 1 similarly recites (A) and (B) from claim 32 in the parent application, amended independent claim 1 should be similarly allowed over Nagata and Reis.

Although the Examiner argued during the interview that claim 32 in the parent application was allowed based on language reciting an airflow between 30-40%, this is not consistent with the record. In fact, in the May 2020 Office Action, the Examiner explicitly argued that it would have been obvious to modify Nagata to have an airflow between 30-40%. Below is an excerpt from the May 2020 Office Action in the parent application:

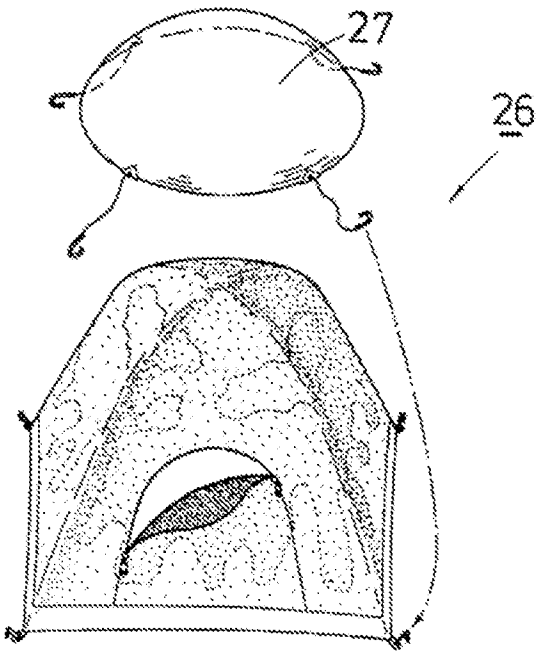
> While Nataga teaches the mesh material can have a wide variety of potential aperture densities due to the size of the net holes (6; col. 4, lines 1-11), Nagata does not explicitly teach an airflow between 30% and 40%. ECHOD Designs teaches a mesh material comprising a 37% air flow. It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify Nagata to have an airflow of 37%, such as that taught by ECHOD Designs, since this airflow provides sufficient ventilation while still helping the hunter remain hidden in the blind.

Accordingly, it is respectfully submitted that amended independent claim 1 should be allowed, for this reason alone.

First Alternate Basis to overcome the rejection of Independent Claim 1

Amended independent claim 1 recites that the panels of mesh material define an outer surface of the camouflage structure. In rejecting dependent claim 12, the Office Action contended that "Fig. 5e" of Nagata discloses that "the mesh material is on the outside of the structure thus defining at least partially the outer surface of the structure" (Office Action, p. 9). Applicant understands that the Examiner meant to cite to "Fig. 3e" not "Fig. 5e" of Nagata, which shows:

FIG. 3e



Nagata explicitly teaches the tent 26 of Fig. 3e as "having a body comprising the sheet material according to the present invention and covered with a transparent plastic sheet 27" (col. 4, lines 22-25)(emphasis added). Thus, Nagata explicitly teaches that the transparent plastic sheet 27 "covers" the tent 26 and thus fails to teach that panels of mesh material define the outer surface of the structure. None of the other cited references account for this noted deficiency. For example, Reis explicitly teaches that a 3D leaf cutout outer layer 21 (not a mesh material) defines the outer surface of the structure.

Accordingly, the rejection of amended independent claim 1 should also be withdrawn for this additional reason.

Second Alternate Basis to overcome the rejection of Independent Claim 1

Amended independent claim 1 recites that one or more panels of non-mesh material are provided along a roof of the camouflage structure and attached to the flexible frame members and cover the area between the spaced apart frame members.

In rejecting dependent claim 17, the Office Action cited to "member 24" of Reis that "provides the roof" (Office Action, p. 10). However, Reis explicitly teaches that the ceiling 24 "includes the three-dimensional camouflage outer layer 21 attached to an opaque inner layer 23" (col. 6, lines 43-45)(emphasis added). Indeed, Reis teaches that the outer layer 21 is an opaque layer with 3D leaf cutouts 26 that covers the mesh portion 25 of the inner layer 23. Thus, even if one of ordinary skill in the art did find it obvious to modify Nagata with the ceiling 24 of Reis, it would necessarily involve covering the tent of Nagata with the opaque outer layer 21 (non-mesh material). Consequently, this modified version of Nagata would feature non-mesh material (outer layer 21) defining an outer surface of the structure and thus necessarily fail to teach that panels of mesh material define an outer surface of the camouflage structure, as recited in amended independent claim 1.

Additionally, Applicant notes that the rejection of claim 17 fails to provide any prima facie conclusion of obviousness, including how or why one of ordinary skill in the art would have found it obvious to modify Nagata based on the ceiling 24 of Reis. Per MPEP 2142, "The examiner bears the initial burden of factually supporting any prima facie conclusion of obviousness. If the examiner does not produce a prima facie case, the applicant is under no obligation to submit secondary evidence to show nonobviousness."

Additionally, it is noted that during the interview, Examiner Dunn remarked that Nagata could be modified based only on the inner layer 23 of Reis and not the outer layer 21. However, this is contradicted by the express teaching of Reis, which confirms that the ceiling 24 of Reis includes the outer layer 21. To insist that one of ordinary skill in the art would have found it obvious to modify Nagata with the ceiling 24 of Reis yet somehow not utilize the outer layer 21 that explicitly forms the ceiling 24 is to resort to impermissible

hindsight reconstruction where Applicant's claims are being used as the template for the proposed modification rather than the teaching of the cited art.

Additionally, Reis explicitly teaches that "both the inner 23 and outer 21 layers, all cooperate to substantially prevent visibility of the interior of the enclosure when viewed from the outside thereof" (col. 6, lines 12-14). Given that preventing the visibility of the interior of the tent is a stated goal of Nagata, without conceding the argument, even if one of ordinary skill in the art did find it obvious to modify Nagata based on Reis, to further prevent visibility of the occupant of the tent 26, they would necessarily employ "both the inner 23 and outer 21 layers" based on this express teaching of Reis.

Accordingly, the rejection of amended independent claim 1 should also be withdrawn for this additional reason.

Third Alternate Basis to overcome the rejection of Independent Claim 1

Claim 1 recites one or more panels of non-mesh material provided along a roof of the camouflage structure and attached to the flexible frame members and cover the area between the spaced apart frame members. In the rejection of claim 15, the Office Action argued that it would have been obvious to modify Nagata with the ceiling 24 and lower portion 27 of Reis "to ensure the structure is partially impervious to implement/cold weather" (Office Action, p. 10).

However, as discussed above, the proposed modification of Nagata with the ceiling 24 of Reis necessarily means modifying Nagata with the outer layer 21 of Reis (that defines the ceiling 24). Consequently, this proposed modification of Nagata would result in non-mesh material defining the outer surface of the structure, rather than panels of mesh material, as recited in amended claim 1.

Additionally, Nagata emphasizes that lack of air permeability is a problem with tents, resulting in "users feel uncomfortable in the tent" (col. 1, line 33). Despite this express teaching in Nagata, the rejection asserts that one of ordinary skill in the art would have found it obvious to modify the tent of Nagata to reduce the air permeability through the tent, based on the suggestion "to include one or more non-mesh panels" (Office Action, p. 10). Per MPEP 2143.01, the proposed modification would render Nagata

unsatisfactory for its intended purpose of reducing user discomfort in the tent due to reduced air permeability. Accordingly, the rejection is fatally deficient, per MPEP 2143.01.

Applicant further notes that Nagata already discloses a clear plastic sheet 27 placed over the tent which would already make the tent "partially" impervious to implement/cold weather. Thus, the stated basis of the proposed modification of Nagata ("...to ensure the structure is partially impervious to implement/cold weather", Office Action p. 10) is fatally deficient. Per MPEP 2143.01, "there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." Indeed, no such articulated reasoning or rational underpinning supports a legal conclusion of obviousness, given that the stated basis of the proposed modification is already present prior to said modification.

Accordingly, amended independent claim 1 is patentable. Amended independent claim 10 recites similar language as amended independent claim 1 and thus amended independent claim 10 should also be patentable for the same reasons as argued above with respect to amended independent claim 1. Dependent claims 2 – 9 and 11 – 20, which recite yet further distinguishing features, are also patentable, based on the arguments provided above with respect to independent claim 1.

Basis to overcome the rejection of Dependent Claim 3

Dependent claim 3 recites that the camouflage pattern is based on an exterior environment where the camouflage structure will be positioned to make the camouflage structure blend in with the exterior environment.

The rejection of claim 1 conceded that Nagata fails to explicitly state that the tent has a camouflage pattern (Office Action, p. 6). The rejection of claim 1 asserted that "it appears that Nagata teaches a camouflage pattern in Fig. 5e" (Office Action, p. 6). In rejecting dependent claim 3, the Office Action argued that "making the camouflage structure blend in with the surrounding environment is the purpose of camouflaging an object, thus ensuring it is not readily visible/distinctive from the surrounding environment,

so making it match the specific environment it will be located in is obvious to one of ordinary skill in the art." (Office Action, p. 7).

However, Nagata gives no indication or suggestion of a desire to have the tent "blend in with the surrounding environment" to ensure "it is not readily visible/distinctive from the surrounding environment", as asserted in the proposed modification. Instead of ensuring that the tent is concealed within the environment, Nagata is concerned with ensuring that the occupant is concealed within the tent (col. 1, lines 45-50; col. 2, lines 22-24). The rejection overlooks this key distinction and instead insists that Nagata is concerned with concealing the tent within the environment. Indeed, one of ordinary skill in the art would not find it obvious to modify Nagata based on criteria (concealing a hunting blind within an environment to conceal the hunting blind to approaching game) not disclosed or suggested by Nagata. The suggestion in the rejection that "it appears that Nagata teaches a camouflage pattern" in Fig. 3e is not consistent with the express teaching of Nagata. In fact, the express teaching of Nagata clearly states that the pattern on the tent in Fig. 3e is likely "characters, figures or symbols" used for "general advertisement" (col. 3, lines 10-15)(emphasis added). The insistence in the rejection that Fig. 3e appears to show a "camouflage pattern" is not grounded in the teaching of Nagata but rather based on impermissible hindsight reconstruction using the language of Applicant's claims.

Accordingly, it is respectfully requested that the rejection of dependent claim 3 be withdrawn.

Basis to overcome the rejection of Dependent Claim 6

Dependent claim 6 recites that a first side of the camouflage structure includes a window that can be opened to provide a shooting position upon the approach of prey from the first side. The argument presented above with respect to dependent claim 3 is restated herein with respect to dependent claim 6. Specifically, although Reis discloses a window provided in the hunting blind, one of ordinary skill in the art would not find it obvious to modify Nagata (a tent used for changing clothes, sunbathing, etc.) based on specific features of a hunting blind used for hunting (window provided in a hunting blind

to shoot approaching game). Thus, it is respectfully requested that amended dependent claim 6 should be allowed.

Applicant respectfully submits that pending claims 1 - 20 are in condition for allowance. Should any further informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,

Date: January 11, 2022

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/345,981	Filing Date 06/11/2021	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

	(Column 1)	(Column 2)			
FOR	NUMBER FILED	NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ 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	01/11/2022	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 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".	/TARA A WASHINGTON/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

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

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

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/345,981	06/11/2021	Christopher M. SEATON	12914-003C2	6659

151692 7590 11/23/2021

Robert L. Wolter
Wolter Van Dyke Davis, PLLC
1900 Summit Tower Blvd.
SUITE 140
Orlando, FL 32810

EXAMINER
JACKSON, DANIELLE

ART UNIT	PAPER NUMBER
3636	

NOTIFICATION DATE	DELIVERY MODE
11/23/2021	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):

cnugent@savvyiplaw.com
patents@savvyiplaw.com
rwolter@savvyiplaw.com

Applicant-Initiated Interview Summary	**Application No.** 17/345,981	**Applicant(s)** SEATON et al.		
	Examiner DANIELLE JACKSON	**Art Unit** 3636	**AIA (First Inventor to File) Status** Yes	**Page** 1 of 2

All Participants (applicant, applicants representative, PTO personnel)	**Title**	**Type**
DANIELLE JACKSON	Examiner	Telephonic
David Dunn	SPE	
Cian O'Brien (Reg. No. 55,792)	Attorney of Record	

Date of Interview: 18 November 2021

Issues Discussed:

35 U.S.C. 103

Applicant argued that the combination of Nagata and Reis et al. would not be obvious for proposed claim 20 since Nagata teaches the sides of the structure (seen in FIG. 5e) to be made almost completely of mesh and adding non-mesh panels would negate Nagata's advantage of having all-over airflow. Applicant also pointed out that Nagata teaches a clear plastic roof piece, so adding a non-mesh roof would block light, which Nagata does not appear to want to do. Applicant further argued that the frames of the present invention and Reis et al. were different, with Reis et al. comprising multiple frame members. While the Examiners agreed that the present invention and the combination of Nagata and Reis et al. are different, there was not enough distinct language in the claims drawn to the differences to cause the combination to not read on the claims proposed by Applicant. Regarding the proposed amendments of claim 1, the Examiners maintain that Reis et al. teaches a camouflage pattern based on the exterior environment.

Proposed Amendment(s)

Applicant proposed amending claims 1 and 20 as seen in the attached sheet.

☑ Attachment

/DAVID R DUNN/ Supervisory Patent Examiner, Art Unit 3636	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

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

Applicant-Initiated Interview Summary	Application No. 17/345,981	Applicant(s) SEATON et al.		
	Examiner DANIELLE JACKSON	Art Unit 3636	AIA (First Inventor to File) Status Yes	Page 2 of 2

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

WHAT IS CLAIMED IS:

1. A camouflage structure comprising:

a frame including a plurality of frame members, said plurality of frame members comprising at least two spaced apart frame members; and

one or more panels of mesh material of interwoven fabric configured to be attached between the least two spaced apart frame members, said one or more panels comprising;

a first side with a camouflage pattern; and

a second side with a color coating, said second side opposite to the first side;

wherein the camouflage pattern is based on an exterior environment where the camouflage structure will be positioned to make the camouflage structure blend in with the exterior environment.

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20. A camouflage structure comprising:

a frame including a plurality of frame members, said plurality of frame members comprising at least two spaced apart frame members;

one or more panels of mesh material of interwoven fabric configured to be attached between the least two spaced apart frame members, said one or more panels comprising;

a first side with a camouflage pattern, and

a second side with a color coating, said second side opposite to the first side, and

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~~The camouflage structure of claim 1, further comprising~~ one or more panels of non-mesh material configured to be attached to the frame members and cover the area between the spaced apart frame members;

wherein the frame is a pop-up frame including a plurality of flexible frame members;

wherein the second side of the mesh material is coated with a dark color coating; and

wherein the panels of the mesh material define an outer surface of the camouflage structure.

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Robert L. Wolter
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Courtesy Reminder for
Application Serial No: 17/345,981

Attorney Docket No: 12914-003C2
Customer Number: 151692
Date of Electronic Notification: 11/12/2021

This is a courtesy reminder that new correspondence is available for this application. If you have not done so already, please review the correspondence. The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

An email notification regarding the correspondence was sent to the following email address(es) associated with your customer number:

rwolter@savvyiplaw.com
patents@savvyiplaw.com
cnugent@savvyiplaw.com

To view your correspondence online or update your email addresses, please visit us anytime at **https://ppair-my.uspto.gov/pair/PrivatePair.**
If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov or call 1-866-217-9197.

DBR Finance, Inc., Ex. 1006

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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151692 7590 11/12/2021

Robert L. Wolter
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Orlando, FL 32810

EXAMINER	
JACKSON, DANIELLE	

ART UNIT	PAPER NUMBER
3636	

NOTIFICATION DATE	DELIVERY MODE
11/12/2021	ELECTRONIC

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rwolter@savvyiplaw.com

Office Action Summary	Application No. 17/345,981	Applicant(s) SEATON et al.	
	Examiner DANIELLE JACKSON	Art Unit 3636	AIA (FITF) Status Yes

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

Period for Reply

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

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

Status

1)☑ Responsive to communication(s) filed on 11 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) 1-20 is/are pending in the application.

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

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-20 is/are rejected.

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

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

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

Application Papers

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

11)☑ The drawing(s) filed on 11 June 2021 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 6/24/2021, 8/31/2021.

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

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

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

Specification

The disclosure is objected to because of the following informalities:

Page 10, paragraph 32, "18'" should be changed to --18--.

Appropriate correction is required.

Claim Objections

Claims 1, 12-14, 16 and 20 are objected to because of the following informalities:

Claim 1, line 5, "the least two spaced apart frame members" should be changed to --the at least two spaced apart frame members--.

Claim 1, line 5, "said one or more panels comprising;" should be changed to --said one or more panels comprising:--.

Claim 12, line 1, "the panels" should be changed to --the one or more panels-- for consistency purposes.

Claim 13, line 1, "the panels" should be changed to --the one or more panels-- for consistency purposes.

Claim 13, line 2, "the panels" should be changed to --the one or more panels-- for consistency purposes.

Claim 14, line 1, "the panels" should be changed to --the one or more panels-- for consistency purposes.

Claim 16, line 1, "the panels" should be changed to --the one or more panels-- for consistency purposes.

Claim 20, line 6, "the panels" should be changed to --the one or more panels-- for consistency purposes.

Appropriate correction is required.

Double Patenting

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.

Claims 1-20 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-53 of copending Application No. 16/998,843 (reference application). Although the claims at issue are not identical, they are not patentably distinct from each other because they both recite a camouflage structure comprising: a frame having at least two spaced apart frame members' and one or more mesh panels including a first side with a camouflage pattern and a second side with a color coating, wherein the mesh material is partially transmissive so that the

exterior of the structure is visible from the interior of the structure, but the interior is not visible from the exterior.

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

Claims 1-20 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 10,765,108 B2. Although the claims at issue are not identical, they are not patentably distinct from each other because they both recite a camouflage structure comprising: a frame having at least two spaced apart frame members' and one or more mesh panels including a first side with a camouflage pattern and a second side with a color coating, wherein the mesh material is partially transmissive so that the exterior of the structure is visible from the interior of the structure, but the interior is not visible from the exterior.

Claim Rejections - 35 USC § 103

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

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 and 9-20 is/are rejected under 35 U.S.C. 103 as being unpatentable over Nagata (US-6,004,649) in view of Reis et al. (US-7,565,909 B2).

Claim 1: Nagata teaches a structure (FIG. 5e) comprising: a frame (the tent inherently has some frame members in order to keep it in erect position); a panel of a mesh material (1) defining an interior of the camouflage structure (inside of tent seen in FIG. 5e); wherein the mesh material is interwoven fabric with a pattern (5; see FIG. 5e) printed on a first side (col. 3, lines 59-60) and a second side with a color coating (4), said second side opposite to the first side (as seen in FIG. 1).

While it appears that Nagata teaches a camouflage pattern in FIG. 5e, Nagata does not explicitly state the pattern to be a camouflage pattern. Additionally Nagata is silent on the structure of the frame of the structure/tent. Reis et al. teaches a portable camouflage enclosure/blind comprising: a frame (70, FIG. 5; or alternatively 350, FIG. 15) including a plurality of frame members (72 or 354/356), said plurality of frame members comprising at least two spaced apart frame members (any of the two members 72 opposite one another; or any of two members 354/356); a plurality of camouflage panels (cover 20 is comprised of panels 22, and 24, which are camouflaged, col. 4, lines 47-57); alternatively cover 220 is comprised of panels 222, which are camouflaged the same as panels 22 and 24) attached to the frame members covering an area between the spaced apart frame members and defining an interior of the structure as seen in the figures). It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify Nagata to include a frame such as the frame of Reis et al., to provide a collapsible, lightweight, yet structurally sound frame for the blind that can easily be erected on site.

Claim 2: Nagata teaches the camouflage pattern as comprising one or more ink substance printed on the first side (col. 3, lines 59-60), but doesn't teach the single color

coating as being printed on the second side (teaches the single color coating as being sprayed onto the second side; col. 3, lines 58-59). However, it would have been obvious to one to ordinary skill in the art to have both sides be printed with ink since the first side is already printed with ink and it would make manufacturing the mesh material efficient if both sides used the same machine to produce the colors for both sides (possibly simultaneously). It would also ensure that both sides could withstand the same kinds of conditions and one would not degrade faster than the other.

Claim 3: The combination does not explicitly state the camouflage pattern being based on an exterior environment where the camouflage structure will be positioned; however making the camouflage structure blend in with the surrounding environment is the purpose of camouflaging an object, thus ensuring it is not readily visible/distinctive from the surrounding environment, so making it match the specific environment it will be located in is obvious to one of ordinary skill in the art.

Claims 4-6: Nagata teaches the color coating as comprising a single dark color coating comprising at least one of a black color coating, a brown color coating, a grey color coating, a red color coating, a dark blue color coating, a dark purple color coating, a dark orange color coating and a dark yellow color coating (col. 3, lines 18-28; “black, dark blue, or dark gray”).

Claim 9: Nagata teaches the mesh material to be formed by weaving yarn material (col. 2, lines 58-67, co. 3, lines 1-5, col. 3, lines 51-67, col. 4, lines 1-26).

Claim 10: Nagata teaches a structure (FIG. 5e) comprising: a frame (the tent inherently has some frame members in order to keep it in erect position); a panel of a mesh material (1) defining an interior of the structure (inside of tent seen in FIG. 5e);

wherein the mesh material is interwoven fabric with a pattern (5; see FIG. 5e) printed on a first side (col. 3, lines 59-60) and a second side with a color coating (4), said second side opposite to the first side (as seen in FIG. 1); wherein the mesh material is partially transmissive (due to net holes 6) such that a portion of incident radiation from an exterior of the camouflage structure is reflected off the pattern back into the exterior, a portion of incident radiation from an interior of the camouflage structure is transmitted through the mesh material to the exterior and wherein a ratio of an intensity of the reflected portion to an intensity of the transmitted portion is above a threshold value such that an exterior of the structure is visible through the mesh material from the interior of the structure and the interior of the structure is not visible through the mesh material from the exterior of the structure (col. 2, lines 18-25; col. 4, lines 51-54); and wherein the threshold ratio value is 1 (the threshold value inherently must exceed 1 since the mesh material of Nagata is one-way, which means that the intensity of the light reflected to the exterior over the intensity of the light transmitted through the mesh material is great than 1 as more light is reflected back out into the exterior of the structure so the interior of the structure cannot be seen, thus making it one-way).

While it appears that Nagata teaches a camouflage pattern in FIG. 5e, Nagata does not explicitly state the pattern to be a camouflage pattern. Additionally Nagata is silent on the structure of the frame of the structure/tent. Reis et al. teaches a portable camouflage enclosure/blind comprising: a frame (70, FIG. 5; or alternatively 350, FIG. 15) including a plurality of frame members (72 or 354/356), said plurality of frame members comprising at least two spaced apart frame members (any of the two members 72 opposite one another; or any of two members 354/356); a plurality of

camouflage panels (cover 20 is comprised of panels 22, and 24, which are camouflaged, col. 4, lines 47-57); alternatively cover 220 is comprised of panels 222, which are camouflaged the same as panels 22 and 24) attached to the frame members covering an area between the spaced apart frame members and defining an interior of the structure as seen in the figures). It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify Nagata to include a frame such as the frame of Reis et al., to provide a collapsible, lightweight, yet structurally sound frame for the blind that can easily be erected on site.

Claim 11: Nagata teaches the mesh material to be produced by: printing the pattern on the first side using a first ink (col. 3, lines 59-60), but doesn't teach the single dark color coating as being printed on the second side using a second ink (teaches the single color coating as being sprayed onto the second side; col. 3, lines 58-59). However, it would have been obvious to one to ordinary skill in the art to have both sides be printed with ink since the first side is already printed with ink and it would make manufacturing the mesh material efficient if both sides used the same machine to produce the colors for both sides (possibly simultaneously). It would also ensure that both sides could withstand the same kinds of conditions and one would not degrade faster than the other.

Claim 12: Nagata teaches the one or more panel of mesh material as defining an outer surface of the structure (as seen in FIG. 5e, the mesh material is on the outside of the structure thus defining at least partially the outer surface of the structure).

Claim 13: Nagata teaches the second side of the one or more panels of the mesh material as defining an interior of the structure and the first side of the one or more

panels of the mesh material as defining an exterior of the structure (since Nagata only teaches the material as being one layer, the second side would define the interior and the first side would define the exterior), and wherein the plurality of frame members are configured to form an enclosure that surrounds the interior (as seen in FIG. 5e of Nagata or FIGS. 1-4 and 14-15 of Reis et al.).

Claim 14: Nagata teaches the one or more panels of mesh material as providing a 360 degree view of the exterior of the camouflage structure from the interior of the camouflage structure (as seen in FIG. 5e of Nagata, the mesh material is used on all sides of the frame/structure, therefore creating a 360 degree view of the exterior from the interior). Reis et al. also teaches the one or more panels of mesh material as providing a 360 degree view of the exterior of the camouflage structure from the interior of the camouflage structure (title; abstract).

Claims 15 and 16: Reis et al. teaches one or more panels of non-meshnon-transmissive material (24, 27 are opaque/non-transmissive; col. 4, lines 56-57) configured to be attached to the frame members and cover the area between the spaced apart frame members as seen in FIGS.4 and 14). It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify Nagata to include one or more non-mesh panels, like taught in Reis et al., to ensure the structure is partially impervious to implement/cold weather.

Claim 17: Reis et al. teaches the one or more non-mesh panels to cover the area between the spaced apart frame members along the roof of the camouflage structure (member 24 provides the roof).

Claim 18: Reis et al. teaches the frame as being a pop-up frame and the frame members are flexible (col. 8, lines 12-13; or col. 13, lines 64-65).

Claim 19: Reis et al. teaches the frame members as having a variation in spacing between the spaced apart frame members (some of the frame members 72 are spaced apart by a greater distance than they are spaced apart from other frame members, i.e. there is a variation in the spacing between one frame member and a frame member directly adjacent it and another frame member across the tent from it; each pole 354-356 is located closer to an adjacent pole towards the top of the poles and further from the adjacent pole towards the bottom of the poles).

Claim 20: Nagata teaches the second side of the mesh material as being coated with a dark color coating (col. 3, lines 18-28; "black, dark blue, or dark gray"); and wherein the one or more panels of the mesh material define an outer surface of the camouflage structure (as seen in FIG. 5e, the mesh material is on the outside of the structure thus defining at least partially the outer surface of the structure). Reis et al. teaches one or more panels of non-mesh material (24, 27 are opaque/non-transmissive; col. 4, lines 56-57) configured to be attached to the frame members and cover the area between the spaced apart frame members (as seen in FIGS. 4 and 14) and teaches the frame is a pop-up frame including a plurality of flexible frame members (col. 8, lines 12-13; or col. 13, lines 64-65).

Claim 7 is/are rejected under 35 U.S.C. 103 as being unpatentable over Nagata (US-6,004,649) in view of Reis et al. (US-7,565,909 B2) as applied to claim 1 above, and further in view of Tabei et al. (JP-H09321485 A).

The combination is discussed above and Nagata teaches the mesh material to be made of polyester (col. 4, lines 12-13) but lacks acrylic fibers. Tabei et al. teaches a sheet comprising a mesh material made of polyester material and an acrylic fiber that is then coated (English translation of the specification; "A metal film is formed by applying a conductive treatment to a woven cloth formed by weaving 10 μm polyester, nylon, and acrylic fiber threads into a mesh structure of 14 to 580 mesh / inch"). It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify the combination to include a polyester material with acrylic fibers, such as that taught by Tabei et al., as an alternative that would provide a strong material less prone to tearing.

Claim 8 is/are rejected under 35 U.S.C. 103 as being unpatentable over Nagata (US-6,004,649) in view of Reis et al. (US-7,565,909 B2) as applied to claim 1 above, and further in view of Meadows (US-2008/005987 A1).

The combination is discussed above and Nagata teaches the mesh material to be made of polyester (col. 4, lines 12-13) but lacks a vinyl-coated polyester material. Meadows teaches an ornamental screen comprising a mesh material made of vinyl-coated polyester material (paragraph 68). It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify the combination to include a vinyl-coated polyester material, such as taught by Meadows, as an alternative that would provide a strong material less prone to tearing.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIELLE JACKSON whose telephone number is (571)272-2268. The examiner can normally be reached M-F: 11AM-7PM EST.

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, David Dunn can be reached on (571)272-6670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/DNJ/
Examiner, Art Unit 3636

/DAVID R DUNN/
Supervisory Patent Examiner, Art Unit 3636

Notice of References Cited	Application/Control No. 17/345,981	Applicant(s)/Patent Under Reexamination SEATON et al.	
	Examiner DANIELLE JACKSON	Art Unit 3636	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-20080005987-A1	01-2008	Meadows; Ralph C.	E06B9/52	52/311.1
*	B	US-20080006375-A1	01-2008	Meadows; Ralph C.	E06B9/52	160/371
	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	JP-09321485-A	12-1997	JP	TABEI, MASANORI	
	O					
	P					
	Q					
	R					
	S					
	T					

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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/345,981	SEATON et al.
	Examiner	Art Unit
	DANIELLE JACKSON	3636

CPC - Searched*		
Symbol	Date	Examiner
F41H 3/02	03/02/2019	DNJ
Updated above search of parent App. No. 15/444,909	11/06/2021	DNJ

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

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

Search Notes		
Search Notes	Date	Examiner
Search - see attached	11/06/2021	DNJ
PALM - Inventor Search	11/06/2021	DNJ

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

/DNJ/ Examiner, Art Unit 3636	

DBR Finance, Inc., Ex. 1006

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/345,981	SEATON et al.
	Examiner	Art Unit
	DANIELLE JACKSON	3636

✓	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	11/05/2021								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
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	16	✓								
	17	✓								
	18	✓								
	19	✓								
	20	✓								

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

PTO/SB/08a (03-15)
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Application Number	17345981
Filing Date	2021-06-11
First Named Inventor	Christopher M. SEATON
Art Unit	3636
Examiner Name	
Attorney Docket Number	12914-003C2

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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	4308882		1982-01-05	Pusch	
	2	4425959		1984-01-17	Von Mosshaim	
	3	5842495		1998-12-01	Egnew	
	4	7040333		2006-05-09	Ransom	
	5	7568492		2009-08-04	Helmer	
	6	5261978		1993-11-16	Reynolds	
	7	6004649		1999-12-21	Nagata	
	8	6009673		2000-01-04	Adams	

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	Examiner Name	
	Attorney Docket Number	12914-003C2

	9	6942065		2005-09-13	Price	
	10	7427433		2008-09-23	Li, et al.	
	11	7565909		2009-07-28	Reis, et al.	
	12	9163451		2015-10-20	Curry	
	13	6734125	B2	2004-05-11	Veiga	
	14	7081324	B1	2006-07-25	Hare et al.	

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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	20030096546	A1	2003-05-22	Strength, et al.	
	2	20070006909	A1	2007-01-11	Lewis	
	3	20080083443	A1	2008-04-10	Eastman	

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	4	20090277094	A1	2009-11-12	Ward	
	5	20100031423	A1	2010-02-11	Cincotti, et al.	
	6	20100232029	A1	2010-09-16	Lewis, et al.	
	7	20120128890	A1	2012-05-24	Mirchev	
	8	20170245491	A1	2017-08-31	Seaton et al.	
	9	20170156340	A1	2017-06-08	Toreki et al.	
	10	20050048230	A1	2005-03-03	Dalvey et al.	

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	1	2017074394	WO	A1	2017-05-04	Hewlett-Packard Development Co., L.P.		

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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	ECHOD Graphics Vinyl Mesh Printing–Vinyl Mesh Banner 37% Air Flow (https://web.archive.org/web/20140117130123/https://www.echodgraphics.com- /category1.asp?cid=101&iid=12103) (Year: 2014)	
	2	AKOVALI, Advances in Polymer Coated Textiles, 2012, Smithers Rapra Technology Ltd, UK	
	3	SINGHA, A Review on Coating & Lamination in Textiles: Processes and Applications, American Journal of Polymer Science, 2012, 39-49, 2(3), Scientific & Academic Publishing Co., Rosemead, CA, USA	

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Attorney Docket Number	12914-003C2

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Signature	/Robert L. Wolter/	Date (YYYY-MM-DD)	2021-06-24
Name/Print	ROBERT L. WOLTER	Registration Number	36972

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

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Application Number	17345981
Filing Date	2021-06-11
First Named Inventor	Christopher M. SEATON
Art Unit	3636
Examiner Name	
Attorney Docket Number	12914-003C2

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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	5565265	A	1996-10-15	Rubin et al.	

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	1	20030207629	A1	2003-11-06	Sobieski et al.	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99**)	Application Number	17345981
	Filing Date	2021-06-11
	First Named Inventor	Christopher M. SEATON
	Art Unit	3636
	Examiner Name	
	Attorney Docket Number	12914-003C2

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Signature	/Robert L. Wolter/	Date (YYYY-MM-DD)	2021-08-31
Name/Print	ROBERT L. WOLTER	Registration Number	36972

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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. /DNJ/

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	2212	F41H3/02.cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2021/11/06 01:25 PM
L2	126	L1 AND @pd>="20200601"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2021/11/06 01:25 PM
L3	10	L1 AND (net netting mesh screen) SAME polyester SAME (acrylic ADJ fiber)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2021/11/06 01:39 PM
L4	4	L1 AND (net netting mesh screen) SAME polyester SAME (vinyl ADJ coat$3)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2021/11/06 01:41 PM
L5	546	(net netting mesh screen) SAME polyester SAME (vinyl ADJ coat$3)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2021/11/06 01:41 PM
L6	441	(net netting mesh screen) SAME polyester WITH (vinyl ADJ coat$3)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2021/11/06 01:41 PM
L7	2030	(net netting mesh screen) SAME polyester WITH (acrylic ADJ fiber)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2021/11/06 02:08 PM
L8	700	(net netting mesh screen) WITH polyester	(US-PGPUB; USPAT; USOCR; FIT (AP, AT,	OR	ON	ON	2021/11/06 02:12 PM

		WITH (acrylic ADJ fiber)	AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)				
L9	62	("6004649"|"20070006909"|"6009673"|"7565909"|"20080083443"|"20120128890"|"5842495"|"7081324"|"4308882"|"20030096546"|"5261978"|"9163451"|"20170156340"|"20170245491"|"4425959"|"20030207629"|"20090277094"|"20100031423"|"7427433"|"20050048230"|"20100232029"|"6734125"|"6942065"|"7040333"|"7568492"|"5565265").PN.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2021/11/06 05:47 PM
L10	26	("6004649"|"20070006909"|"6009673"|"7565909"|"20080083443"|"20120128890"|"5842495"|"7081324"|"4308882"|"20030096546"|"5261978"|"9163451"|"20170156340"|"20170245491"|"4425959"|"20030207629"|"20090277094"|"20100031423"|"7427433"|"20050048230"|"20100232029"|"6734125"|"6942065"|"7040333"|"7568492"|"5565265").PN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/11/06 05:48 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

ELECTROMAGNETIC WAVE SHIELDING SHEET

PATENT NUMBER	DOCUMENT ID	DATE PUBLISHED	SOURCE
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PATENT FAMILY ID
15186556

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APPLICANT INFORMATION

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AUTHORITY	TYPE
N/A	N/A

DATE FILED
1996-05-30

Abstract

PROBLEM TO BE SOLVED: To provide an electromagnetic wave shielding sheet which is freely adhered to a window glass face by utilizing self-adhesion held in a sheet without using adhesives. SOLUTION: This sheet is composed of a laminated layer of a conductive screen 1 and a coat layer 2. In the conductive screen 1, conductive processing is performed in a meshes texture of cloths having dimension stabilization, and the coat layer 2 is a transparent soft vinyl chloride resin layer containing plastic materials. The coat layer 2 coats the conductive screen 1, and a sheet face is formed on the surface. One sheet face is a face adhered to glass and has self-adhesion.

Description

Detailed Description of the Invention
[0001]
BACKGROUND OF THE INVENTION 1. Field of the Invention The present invention relates to a light-transmitting electromagnetic wave shielding sheet, and more particularly to an electromagnetic wave shielding sheet attached to a window glass.
[0002]

2. Description of the Related Art Electromagnetic wave shield measures for preventing electronic devices from being disturbed by external electromagnetic waves or leaking electromagnetic waves from various types of information devices and computers to the outside of electronic devices are also provided. A transparent or semi-transparent electromagnetic wave shield material is required to maintain the daylighting through a window when magnetically shielding the room where electronic equipment is installed. As a shield material for this purpose, Japanese Patent Application Laid-Open No. 7-212485 discloses a transparent or translucent soft vinyl chloride in which both sides of a fiber having a high aperture ratio and made of metal-plated surfaces reach both sides through the openings. An electromagnetic wave shielding material for windows which is covered with a resin is described.
This prior example is used as an electromagnetic wave shielding material for windows, 1) is transparent or semi-transparent, and 2) is excellent in electromagnetic wave shielding effect (for example, 50).
More than dB), 3) Flexible and easy to attach to window glass, 4) Large product of 1 square meter or more is possible, 5) Inexpensive, all requirements are metal plated The woven fabric could be filled with a soft vinyl chloride resin.
[0004]
According to the above-mentioned electromagnetic wave shielding material for windows according to the prior art, the soft vinyl chloride resin is formed into a sheet by a technique such as calender molding, and the soft vinyl chloride resin sheet is smooth and flexible. Yes, for example, something that gets wet with water and sticks tightly to the window glass,
That is, an example of sticking a shield material to a window glass using an adhesive is described as an embodiment, and the electromagnetic wave shield material for a window may be attached to a glass plate in the manufacturing process of the window glass. It is explained.
In short, in this prior art example, an electromagnetic wave shielding material is attached to a window glass by using an adhesive. Since the soft vinyl chloride resin has a good compatibility with the adhesive, it can be used as long as it is a paste material that has adhesiveness without the need to use an adhesive when attaching the electromagnetic wave shielding material. Although it is presumed that it would be possible, it seems that it is extremely troublesome to actually apply the adhesive to the glass surface of the window glass or the sheet surface of the electromagnetic wave shielding material and apply it. Further, it seems that the purpose of using the adhesive is not to permanently adhere the electromagnetic wave shielding agent to the window glass, and it is considered that the adhesive will be peeled off eventually. Therefore, after the electromagnetic wave shield material is peeled off, the window glass must be wiped off so that no adhesive remains. This also applies to the electromagnetic wave shield material.
[0006] If the adhesive is still attached to the sheet surface of the electromagnetic wave shield material peeled from the window glass, it cannot be wound up or overlaid on another sheet. Take up the stripped electromagnetic shield material for storage,
Alternatively, when it is overlapped on another sheet, the adhesive applied to the sheet surface of the shield material adheres to the other surface, and the entire surface becomes sticky.
For the above reasons, even if the electromagnetic wave shielding material of the prior art is flexible and can be easily attached to the window glass, the use of an adhesive for the attachment would mean that the electromagnetic wave shielding material for windows is used. As a result, it is extremely inconvenient in the case of removal or replacement.
An object of the present invention is to provide an electromagnetic wave shielding sheet which can be freely attached to a window glass surface by utilizing the self-adhesiveness of the sheet without using an adhesive.
[0009]
In order to achieve the above object, an electromagnetic wave shielding sheet according to the present invention is an electromagnetic wave shielding sheet comprising a conductive screen and a coating layer, wherein the conductive screen has a size. Conductive treatment is applied to the network structure of stable fabric,
The coating layer is a transparent synthetic resin, forms a sheet surface by coating the conductive screen, and the coating layer forming at least one sheet surface is a self-adhesive soft vinyl chloride resin layer.
The conductive screen has a screen printing screen of 14 to 580 mesh / inch as a cloth and has a metal film in its mesh structure.
Further, the coating layer is composed of only one layer of the self-adhesive soft vinyl chloride resin layer,

and the conductive screen is
It is embedded in the coating layer.
[0012]
DESCRIPTION OF THE PREFERRED EMBODIMENTS Embodiments of the present invention will be described below with reference to the drawings. In FIG. 1, the electromagnetic wave shielding sheet according to the present invention has a laminate of a conductive screen 1 and a coating layer 2.
The conductive screen 1 has a thickness of 30 μm-4.
A metal film is formed by applying a conductive treatment to a woven cloth formed by weaving 10 μm polyester, nylon, and acrylic fiber threads into a mesh structure of 14 to 580 mesh / inch.
The woven cloth of the conductive screen 1 is preferably a silk screen used for screen printing. The silk screen has a uniform mesh structure, and the EMI performance can be adjusted by adjusting the mesh size of the mesh and the weight of the metal. The conductivity of the screen is 0.1Ωcm .sup.2
The electromagnetic wave can be shielded as long as it is below. The conductive treatment is performed by electroless plating of Cu, Ni or the like, or metal spraying. If the weight of the metal does not reach the desired conductivity, further adjust the weight of the metal by electrolytic plating or the like. Good.
The reason why the woven cloth having dimensional stability is used for the conductive screen 1 is that a force is applied to the conductive screen in the work after plating, and when the conductive screen is stretched, the metal film on the surface is stretched. This is because there is a possibility that cracking or chipping may occur, which is a cause of failure as an electromagnetic wave shielding sheet. Further, when the conductive screen 1 and the coating layer 2 are laminated or adhered, the conductive screen 1 is tensioned in the length direction and the width direction, so that the conductive screen 1 has no dimensional stability. Wrinkles will occur on the electromagnetic wave shielding sheet.
The cover layer 2 is a flexible transparent synthetic resin layer, and covers the conductive screen 1 to form a sheet surface. The sheet surface is formed on both surfaces of the conductive screen 1, and a self-adhesive soft vinyl chloride resin layer is used for the coating layer 2 forming at least one surface.
As a method of coating the conductive screen with the coating layer, as shown in FIG. 2, the conductive screen 1 is sandwiched between two synthetic resin layers of the coating layers 2a and 2b, and an adhesive or heat fusion is used. The three layers are integrated, or one synthetic resin layer of the coating layer 2 is heated and softened as shown in FIG. 3, and the conductive screen 1 is placed on the softened synthetic resin layer. Can be performed by burying the conductive screen 1.
According to the method (1), the coating layers 2a on the front and back surfaces,
It is possible to change the material of the synthetic resin of 2b,
Sheet-side coating layer 2a to be adhered to a smooth surface such as window glass
It is possible to use a self-adhesive soft vinyl chloride resin for the above and a general synthetic resin having no self-adhesiveness for the coating layer 2b forming the other sheet surface. As a general synthetic resin, any resin that can be bonded or heat-sealed to the self-adhesive soft vinyl chloride resin on the other side may be used, and for example, a sheet material such as vinyl chloride resin or polyolefin resin may be used. It can be used, and various additives such as a colorant, an antistatic agent, a UV absorber and the like may be added thereto to form a functional coating layer.
The self-adhesive soft vinyl chloride resin on the sheet surface can be attached to a smooth surface such as a glass plate by the self-adhesive force of the sheet, and it is not necessary to use an adhesive agent or an adhesive agent. It is a thing. Such resin is usually used to adjust the amount of plasticizer added to the synthetic resin,
It can be obtained by adding a tackifier or the like. Preferably, the other layer or the adhesive surface is treated to prevent migration of the plasticizer. This can improve the durability of the electromagnetic wave shielding sheet and prevent the sheet surface from being soiled.
As the vinyl chloride resin forming the surface of the self-adhesive sheet, a homopolymer of vinyl chloride, a copolymer of vinyl chloride and another monomer, or a blend of vinyl chloride and another resin is used. Things can also be used. Do this
A self-adhesive sheet surface can be obtained by adding an appropriate amount of a plasticizer such as P or BBP. The amount of the plasticizer usually added is about 40 to 90 parts by weight with respect to 100 parts by weight of the vinyl chloride resin. Colorant, nonionic surfactant, UV absorber, antioxidant,

It is also possible to add stabilizers, flame retardants and the like.
These blends are mixed by a Henschel mixer, a Banbury mixer, etc., and obtained as a sheet having a desired thickness by a calendar method or an extrusion method.
When laminating the conductive screen 1 and the coating layer 2 in the case of a long length, as shown in FIG. 4, the coating layer 2 previously processed into a sheet shape is sent out to both surfaces of the conductive screen 1. Using the conductive screen 1 as a core material, the coating layers 2 on both sides thereof are pressed between the heat rolls 3 to melt the coating layer 2 and impregnate the coating layer 2 through the mesh of the conductive screen 1 to form both coating layers 2 , 2 are integrated.
Alternatively, they may be integrated by using an adhesive. In addition,
If a part of both surfaces or one surface of the conductive screen 1 is exposed on the surface, electrodes can be formed on the exposed portion.
In the case of stacking as a short length, the end of the conductive screen 1 may be exposed, or the electrode may be stacked on the end and exposed on the surface. When it is produced as a long product, it can be cut freely according to the size of the window glass, enabling construction with few connecting parts and gaps,
It is advantageous in terms of workability and yield. In the case of producing as a short product, it is possible to create a product suitable for the shape of each construction surface, and it is possible to perform construction without making the user feel uncomfortable.
Most of the conductive screen 1 is embedded in the coating layer 2, and the obtained electromagnetic wave shielding sheet becomes a transparent sheet. It is also possible to color the coating layer 2 by adding a coloring agent or the like to synchronize with the interior of the room. Further, if the surface of the conductive screen 1 is previously colored with a dark color by plating or the like, diffuse reflection of light is prevented, contrast is improved, and the conductive screen 1 in the electromagnetic wave shielding sheet becomes inconspicuous. It also improves transparency.
In the electromagnetic wave shielding sheet of the present invention, when the self-adhesive sheet surface of the covering layer 2 is attached to the window glass, the covering layer 2 adheres to the glass surface, and electromagnetic waves that try to pass through the window glass are The conductive screen 1 blocks the passage. Adhesives and adhesives are not required for attaching the electromagnetic wave shielding sheet, and the sheet itself adheres to the glass plate by its self-adhesive force, and does not peel off or fall off even during long-term use.
[0026]
Examples of the present invention will be described below.
(Example 1) As a conductive screen, 9
Ni / Cu ordinary electroless plating (coating metal amount: 10 to 25 g / m .sup.2) is applied to a 0 cm wide 250 mesh / inch polyester silk screen to obtain a resistance value of 0.2 Ωc.
A conductive screen of m .sup.2 or less was obtained.
As a self-adhesive vinyl chloride resin layer, vinyl chloride resin 100 parts by weight DOP 55 parts by weight Ba-Zn compound stabilizer 2 parts by weight Epoxidized soybean oil 2 parts by weight Coloring agent (ultra-blue) 0.07 parts by weight With a composition of 0.2mm, 90cm width and 85c
Two types of m-width self-adhesive vinyl chloride resin sheets were obtained.
A 90 cm wide self-adhesive vinyl chloride resin sheet is used as a lower layer, and then the conductive screen obtained above is placed thereon, and an 85 cm wide self-adhesive vinyl chloride resin sheet is placed on both ends of the lower layer. The electromagnetic wave shielding sheet of the present invention was obtained by placing it so as to expose it with a width of 2.5 cm and integrating the three layers through a heating and pressing roll at 150 ° C.
About this sheet K. E. FIG. 0 to 10 as a result of measuring the electric field shielding performance and the magnetic field shielding performance by the measuring method by C (Kansai Electronics Industry Promotion Center Ikoma Radio Measuring Station)
At a frequency of 00 MHz, a value of about 60 dB or more was obtained.
The obtained electromagnetic wave shielding sheet is 90 × 90 c
I cut it according to the size of the window of m and attached it to the window,
There were no wrinkles, and it was possible to attach it cleanly.
Further, even after 24 hours, it did not peel off, and was in a state of being attached.

Further, no change was observed in the adhered state even after 1 week. The electromagnetic wave shielding sheet was peeled off, but there was no stain or the like on the part to which the electromagnetic wave shielding sheet was attached, and no difference was seen even when compared with the part to which nothing was attached.
When the peeled electromagnetic wave sheet was attached to another window, it was possible to attach it to the window in the same manner as in the initial state.
(Example 2) The self-adhesive vinyl chloride resin sheet having a width of 85 cm of Example 1 was replaced by a normal vinyl chloride resin sheet having no tackiness.
As a result, the same result could be obtained except that the adhesion work was carried out in a slightly shorter time than in Example 1 because one side had no tackiness.
[0036]
As described above, according to the present invention, a transparent synthetic resin sheet containing a plasticizer is used as a coating layer for embedding a conductive screen, and a self-adhesive property of the sheet is used to make a window glass or the like. Since it is to be adhered, when electromagnetically shielding the window glass while maintaining transparency, it can be fixed only by pressing the electromagnetic wave shielding sheet of the present invention against the window glass, and conversely, when removing from the window glass, the sheet You can easily remove it by peeling it off the window glass,

No adhesive or sizing agent remains on the trace of removal, and therefore dust does not adhere to the glass surface after removal.
According to the present invention, anyone can shield the window from electromagnetic waves in a short time without making the window glass a special glass, and the daylighting of the window is not impaired.
Further, since the electromagnetic wave shielding sheet of the present invention does not have an adhesive layer or an adhesive layer on the back surface, it can be used as a normal electromagnetic wave shielding sheet used as a partitioning material in an electromagnetic wave shielding room.
[Brief description of drawings]
FIG. 1 is a partial cross-sectional front view showing an embodiment of the present invention.
FIG. 2 is a diagram showing an example of a method of coating a conductive screen with a coating layer.
FIG. 3 is a diagram showing another example of a method of coating a conductive screen with a coating layer.
FIG. 4 is a diagram showing an example of a method for manufacturing an electromagnetic wave shielding sheet of the present invention.
[Explanation of symbols]
1 conductive screen 2 coating layer 3 heat roll

Claims

1. An electromagnetic wave shielding sheet comprising a conductive screen and a coating layer, wherein the conductive screen is a woven fabric having dimensional stability that has been subjected to a conductive treatment. The layer is a transparent synthetic resin, is characterized in that it covers the conductive screen to form a sheet surface, the coating layer forming at least one sheet surface is a self-adhesive soft vinyl chloride resin layer Electromagnetic wave shielding sheet.
2. The electromagnetic wave shield according to claim 1, wherein the conductive screen has a screen printing screen of 14 to 580 mesh / inch as a cloth and has a metal film in its mesh structure. Sheet.
3. The coating layer is composed of only one layer of a self-adhesive soft vinyl chloride resin layer, and the conductive screen is embedded in the coating layer.
The electromagnetic wave shielding sheet described in.

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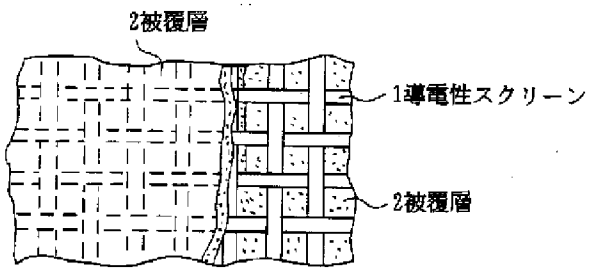
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(54)【発明の名称】　電磁波遮蔽シート

(57)【要約】

【課題】　粘着剤，糊剤を使用せずに電磁波遮蔽シートをガラス窓に貼付ける。

【解決手段】　導電性スクリーン１と被覆層２との積層からなっている。導電性スクリーン１は、寸法安定性を有する織物の網目組織に導電処理が施されたものであり、被覆層２は、可塑剤を含む透明な軟質塩化ビニル樹脂層である。被覆層２は、導電性スクリーン１を被覆し、表面にシート面が形成される。一方のシート面は、ガラスに貼着する面であり、自己粘着性を有している。



【特許請求の範囲】
【請求項１】　導電性スクリーンと、被覆層とによって構成される電磁波遮蔽シートであって、
導電性スクリーンは、寸法安定性を有する織物の網目組織に導電処理が施されたものであり、
被覆層は、透明な合成樹脂であり、導電性スクリーンを被覆してシート面を形成し、少なくとも一方のシート面を形成する被覆層は自己粘着性軟質塩化ビニル系樹脂層よりなることを特徴とする電磁波遮蔽シート。
【請求項２】　導電性スクリーンは、１４～５８０メッシュ／インチのスクリーン印刷用のスクリーンを生地とし、その網目組織に金属膜を有するものであることを特徴とする請求項１に記載の電磁波遮蔽シート。
【請求項３】　被覆層は、自己粘着性軟質塩化ビニル系樹脂層のみの一層で構成され、導電性スクリーンは、被覆層に埋設されていることを特徴とする請求項１又は２に記載の電磁波遮蔽シート。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、光透過性を有する電磁波遮蔽シート、特に窓ガラスに貼着する電磁波遮蔽シートに関する。
【０００２】
【従来の技術】電子機器に対する外来電磁波による障害の発生、あるいは各種情報機器やコンピュータからの電磁波の外部への漏洩を防止するための電磁波シールド対策は、電子機器の筐体に直接施され、また、電子機器を設置した室内を磁気的にシールドする場合に窓からの採光を維持するには、透明又は半透明の電磁波シールド材が必要とされる。この目的に応ずるシールド材として特開平７－２２１４８５号には、表面を金属でメッキされた繊維からなる開口率の高い繊維の両面が、開口を通して両面に達している透明又は半透明の軟質塩化ビニル樹脂で被覆されてなる窓用電磁波シールド材が記載されている。
【０００３】この先行例は、窓用の電磁波シールド材として
１）透明又は半透明であること、
２）電磁波シールド効果に優れていること（例えば５０ｄＢ以上）、
３）フレキシブルで窓ガラスへの張り付けが簡単であること、
４）１平方メートル以上の大型の製品が可能であること、
５）安価であること、
という要件のすべてを、金属メッキされた繊布を軟質塩化ビニル樹脂で被覆することによって満たすことができたというものである。
【０００４】
【発明が解決しようとする課題】上記先行例による窓用電磁波シールド材によれば、軟質塩化ビニル樹脂は、カレンダー成形などの技術によりシート状にされ、軟質塩化ビニル樹脂シートは、滑らかで柔軟であり、例えば水で濡らして窓ガラスにぴったりと張り付くものがよい、としており、実施の形態として粘着剤を用いて窓ガラスにシールド材を貼着する例が説明され、また、窓ガラスの製造段階で窓用電磁波シールド材をガラス板に張り付けておいてもよいと説明されている。
【０００５】要するに、この先行例では、粘着剤を用いて電磁波シールド材を窓ガラスに貼付けるというものである。軟質塩化ビニル樹脂は、粘着剤との相性が良いことから、電磁波シールド材の貼付けに、あえて接着剤を使用しなくても貼着性を有する糊材であれば、これを使用できるということであろうと推測されるものの、現実に粘着剤を窓ガラスのガラス面又は電磁波シールド材のシート面に塗布して貼付ける作業は極めて厄介であろうと思われる。また、粘着剤を使用するのは電磁波シールド剤を恒久的に窓ガラスに接着することが目的でないと思われ、いずれ剥がされることが予定されているものと思われる。したがって、電磁波シールド材を剥がした後には、窓ガラスに粘着剤が残らぬよう拭き取らなければならない。これは電磁波シールド材についても同じである。
【０００６】窓ガラスより剥がされた電磁波シールド材のシート面に粘着剤が付着したままでは、これを巻き取ることも、他のシート上に重ねることもできない。若し、剥した電磁波シールド材を保管のために巻き取り、あるいは他のシート上に重ねたりしたときには、シールド材のシート面に塗布されている粘着剤が他の面に付着するなどして全面がベトベトになってしまうからである。
【０００７】以上の理由から、先行例の電磁波シールド材がフレキシブルであって、窓ガラスへの張り付けが簡単であるとしても、その張り付けのために粘着剤を使用したのでは、窓用電磁波シールド材としてその撤去，張り替えの場合に極めて不都合である。
【０００８】本発明の目的は、粘着剤を用いず、シートの保有する自己接着性を利用して窓ガラス面に自由に貼着しうる電磁波遮蔽シートを提供することにある。
【０００９】
【課題を解決するための手段】上記目的を達成するため、本発明による電磁波遮蔽シートにおいては、導電性スクリーンと、被覆層とによって構成される電磁波遮蔽シートであって、導電性スクリーンは、寸法安定性を有する織物の網目組織に導電処理が施されたものであり、被覆層は、透明な合成樹脂であり、導電性スクリーンを被覆してシート面を形成し、少なくとも一方のシート面を形成する被覆層は自己粘着性軟質塩化ビニル系樹脂層よりなるものである。
【００１０】また導電性スクリーンは、１４～５８０メ

ッシュ／インチのスクリーン印刷用のスクリーンを生地とし、その網目組織に金属膜を有するものである。

【００１１】また被覆層は、自己粘着性軟質塩化ビニル系樹脂層のみの一層で構成され、導電性スクリーンは、被覆層に埋設されているものである。

【００１２】

【発明の実施の形態】以下に本発明の実施の形態を図によって説明する。図１において、本発明による電磁波遮蔽シートは、導電性スクリーン１と、被覆層２との積層を有するものである。

【００１３】導電性スクリーン１は、太さ３０μｍ～４１０μｍのポリエステル，ナイロン，アクリル系の繊維糸を１４～５８０メッシュ／インチの網目組織に織成された織布に導電処理を施して金属膜を形成したものである。

【００１４】導電性スクリーン１の織布は、スクリーン印刷に用いられるシルクスクリーンが好適である。シルクスクリーンは網目組織が均一であり、その網目のメッシュの大きさ、金属の目付量を調整してＥＭＩ性能の調節が可能となる。スクリーンの導電性は０．１Ωｃｍ^{2}以下であれば、電磁波の遮蔽が可能である。導電処理は、Ｃｕ，Ｎｉ等を無電解メッキや金属溶射等によって行うが、金属の目付量が所望の導電性に達しない場合は、更に電解メッキ処理等によって金属の目付量の調整を行ってもよい。

【００１５】導電性スクリーン１に寸法安定性を有する織布を使う理由としては、メッキ後の作業に於いて導電性スクリーンに力が加わり、これが引き伸ばされたときに表面の金属膜は、その伸びに追従できないために、ひび割れや欠落が発生する可能性があり、それが電磁波遮蔽シートとしての不良原因となるためである。また、導電性スクリーン１と被覆層２とを積層や接着させるときに、導電性スクリーン１を長さ方向や幅方向に緊張させて行うため、導電性スクリーン１に寸法安定性がないと得られた電磁波遮蔽シートにシワが発生してしまう。

【００１６】被覆層２は、柔軟性を有する透明合成樹脂層であり、導電性スクリーン１を被覆してシート面を形成するものである。シート面は導電性スクリーン１の両面に形成されるが、少なくとも一方の面を形成する被覆層２には、自己粘着性軟質塩化ビニル系樹脂層を用いる。

【００１７】被覆層による導電性スクリーンの被覆方法としては、①図２のように被覆層２ａ，２ｂの二層の合成樹脂層の間に導電性スクリーン１を挟み、接着剤や熱融着により三層を一体化させたり、または、②図３のように被覆層２の一層の合成樹脂層を加熱軟化させ、その上に導電性スクリーン１を載置し、加熱加圧により、合成樹脂層中に、導電性スクリーン１を埋設させたりすることにより行うことができる。

【００１８】①の方法によると、表裏面の被覆層２ａ，２ｂの合成樹脂の材質を異ならせることが可能となり、窓ガラス等の平滑面に粘着させるシート面の被覆層２ａに自己粘着性軟質塩化ビニル系樹脂を用い、他方のシート面を形成する被覆層２ｂに自己粘着性のない一般の合成樹脂を用いることができる。一般の合成樹脂としては、他面側の自己粘着性軟質塩化ビニル系樹脂と接着や熱融着が可能なものであればよく、例えば、塩化ビニル系樹脂，ポリオレフィン系樹脂等のシート状物を使用することができ、これに、着色剤，帯電防止剤，ＵＶ吸収剤等の各種の添加剤を添加して、機能性のある被覆層としてもよい。

【００１９】シート面の自己粘着性軟質塩化ビニル系樹脂は、ガラス板等の平滑な表面に対して、シートの自己粘着力により貼りつくことができ、接着剤や粘着剤を使用しなくとも良いものである。このような樹脂は、通常、合成樹脂に混入する可塑剤の添加量を調整したり、粘着性付与剤等の添加によって得ることができる。好ましくは、他の層や粘着面に対して可塑剤の移行防止処理されたものがよい。それにより、電磁波遮蔽シートの耐久性が向上したり、シート面の汚れを防止できる。

【００２０】また、自己粘着性シート面を形成する塩化ビニル系樹脂としては、塩化ビニルの単独重合体や塩化ビニルと他のモノマーとの共重合体のほか、塩化ビニルと他の樹脂とのブレンド物も使用できる。これにＤＯＰ，ＢＢＰ等の可塑剤を適量添加することによって、自己粘着性シート面を得ることができる。通常添加されている可塑剤量としては、塩化ビニル系樹脂１００重量部に対して４０～９０重量部程度である。この樹脂に、着色剤，非イオン系界面活性剤，ＵＶ吸収剤，坑酸化剤，安定剤，難燃性付与剤等を加えることも可能である。

【００２１】これら配合物は、ヘンシェルミキサー，バンバリーミキサーなどによって混合し、カレンダー法あるいは押出法により、所望厚みのシート状物として得られる。

【００２２】導電性スクリーン１と被覆層２との積層に際しては、長尺ものとして積層する場合、図４のように、導電性スクリーン１の両面に予めシート状に加工した被覆層２を送り出し、導電性スクリーン１を芯材としてその両面の被覆層２を熱ロール３，３間で圧着し、被覆層２を溶融させ、導電性スクリーン１の網目を通して被覆層２を含浸させて両被覆層２，２を一体化させる。または、接着剤を使用して一体化させてもよい。なお、導電性スクリーン１の両面の一部又は片面一部を表面に露出させれば、その露出部分に電極を形成できる。

【００２３】短尺ものとして積層する場合は、導電性スクリーン１の端部を露出させてもよいし、電極を端部に積層し、これを表面に露出させてもよい。長尺物として生産される場合は、窓ガラスの大きさ等により、自由に裁断でき、繋ぎ部分や隙間等の少ない施工を可能とし、施工性，歩留り等で有利である。短尺物として生産する

場合は、各々の施工面の形状にあったものを作成することができ、違和感を感じさせない施工を行うことができる。

【００２４】導電性スクリーン１は、その大部分が被覆層２内に埋設され、得られた電磁波遮蔽シートは、透明シートとなる。なお、被覆層２に着色剤等を添加することにより着色し、部屋の内装等と同調を計ることも可能である。さらに、導電性スクリーン１の表面に、予め着色メッキ等により、暗色系の着色を施しておけば光の乱反射を防ぎ、コントラストが向上し、電磁波遮蔽シート内の導電性スクリーン１が目立たなくなり、シートの透明度向上ともなる。

【００２５】本発明の電磁波遮蔽シートは、被覆層２の自己粘着性を有するシート面を窓ガラスに貼り付けると、被覆層２がガラス面に密着し、窓ガラスを通過しようとする電磁波は、導電性スクリーン１によって通過は阻止される。電磁波遮蔽シートの貼付けのために粘着剤，接着剤は不要であり、シート自体の有する自己接着力によってガラス板に密着し、長期間に渡る使用においても剥離，脱落しない。

【００２６】

【実施例】以下に本発明の実施例を示す。

【００２７】（実施例１）導電性スクリーンとして、９０ｃｍ幅の２５０メッシュ／インチのポリエステルシルクスクリーンにＮｉ／Ｃｕの通常の無電解メッキ（被覆金属量１０～２５ｇ／m^2）を行い、抵抗値０．２Ωｃm^2以下の導電性スクリーンを得た。

【００２８】自己粘着性塩化ビニル系樹脂層として、

塩化ビニル樹脂	１００重量部
ＤＯＰ	５５重量部
Ｂａ－Ｚｎ系複合安定剤	２重量部
エポキシ化大豆油	２重量部
着色剤（群青）	０．０７重量部

の配合により、厚み０．２ｍｍで、９０ｃｍ幅と８５ｃｍ幅の２種類の自己粘着性塩化ビニル樹脂シートを得た。

【００２９】９０ｃｍ幅の自己粘着性塩化ビニル樹脂シートを下層とし、次に上記で得られた導電性スクリーンを載置し、その上に８５ｃｍ幅の自己粘着性塩化ビニル樹脂シートを下層の両端が２．５ｃｍ幅露出するように載置して、１５０℃の加熱加圧ロールを通して三層を一体化して、本発明の電磁波遮蔽シートを得た。

【００３０】このシートについてＫ．Ｅ．Ｃ（関西電子工業振興センター生駒電波測定所）による測定法により電界遮蔽性能，磁界遮蔽性能を測定した結果、０～１０００ＭＨｚの周波数において、約６０ｄＢ以上のものが得られた。

【００３１】得られた電磁波遮蔽シートを９０×９０ｃｍの窓の大きさにあわせて裁断し、窓に付着させたが、シワの発生もなく、きれいに付着させることができた。また、２４時間後でも剥がれ落ちることがなく、付着させたままの状態であった。

【００３２】更に、１週間経過後も付着状態に変化は見られなかった。この電磁波遮蔽シートを剥がしてみたが、付着させる部分に汚れ等がなく、何も付着させていない部分と比較しても差は見られなかった。

【００３３】また、剥がした電磁波シートを別の窓に付着させてみたが、最初の状態と変わりなく付着させることができた。

【００３４】（実施例２）実施例１の８５ｃｍ幅の自己粘着性塩化ビニル樹脂シートを通常の粘着性のない塩化ビニル樹脂シートに変えて行った。

【００３５】結果としては、片面に粘着性がないので付着作業は実施例１よりも多少短時間で行えた以外は同様の結果を得ることができた。

【００３６】

【発明の効果】以上のように本発明によれば、導電性スクリーンを埋設する被覆層に可塑剤を含む透明合成樹脂シートを用い、シートに生じた自己粘着性を利用して窓ガラス等に接着するものであるため、窓ガラスを透明を保持したままで電磁的にシールドするときには、本発明の電磁波遮蔽シートを窓ガラスに押し付けるのみで定着でき、逆に窓ガラスから撤去するときには、シートを窓ガラスから引き剥がせば、簡単に取り外すことができ、撤去跡には、粘着剤，糊剤などが一切残らず、したがって撤去後のガラス面に埃などが付着することがない。

【００３７】本発明によれば、窓ガラスを特殊なガラスとすることなく、短時間に誰でも窓を電磁波シールドすることができ、窓の採光を損なうことがない。また、本発明の電磁波遮蔽シートは、裏面に接着剤層や粘着材層を持たないので、間仕切り材などとして電磁波シールドルームで使用される通常の電磁波遮蔽シートとして使用することも可能である。

【図面の簡単な説明】

【図１】本発明の一実施形態を示す一部断面正面図である。

【図２】被覆層による導電性スクリーンの被覆方法の一例を示す図である。

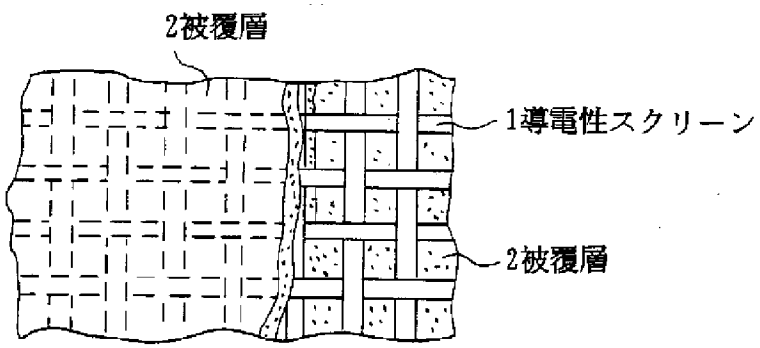
【図３】被覆層による導電性スクリーンの被覆方法の他の例を示す図である。

【図４】本発明の電磁波遮蔽シートの製造方法の一例を示す図である。

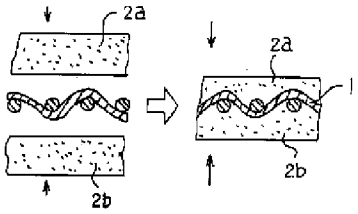
【符号の説明】

１　導電性スクリーン
２　被覆層
３　熱ロール

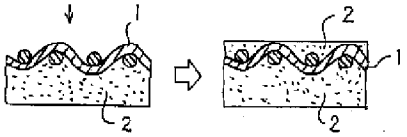
【図１】



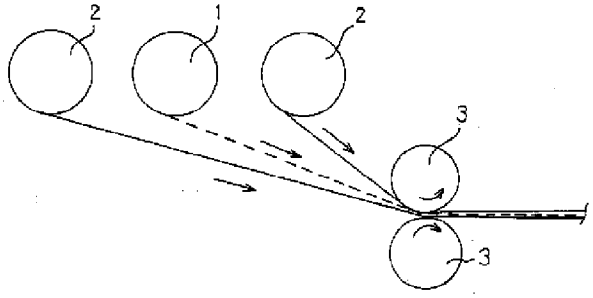
【図２】



【図３】



【図４】



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/345,981	06/11/2021	Christopher M. SEATON	12914-003C2	6659

151692 7590 09/30/2021

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EXAMINER
CENTRAL, DOCKET

ART UNIT	PAPER NUMBER
OPAP	

NOTIFICATION DATE	DELIVERY MODE
09/30/2021	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):

cnugent@savvyiplaw.com
patents@savvyiplaw.com
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Decision Granting Request for Prioritized Examination (Track I)	**Application No.** 17/345,981	**Applicant(s)** SEATON et al.	
	Examiner CHERYL P GIBSON BAYLOR	**Art Unit** OPET	**AIA (FITF) Status** Yes

1. THE REQUEST FILED 11 June 2021 IS **GRANTED** .

   The above-identified application has met the requirements for prioritized examination
   - A. ☑ for an original nonprovisional application (Track I).
   - B. ☐ for an application undergoing continued examination (RCE).

2. **The above-identified application will undergo prioritized examination**. The application will be accorded special status throughout its entire course of prosecution until one of the following occurs:
   - A. filing a **petition for extension of time** to extend the time period for filing a reply;
   - B. filing an **amendment to amend the application to contain more than four independent claims, more than thirty total claims** , or a multiple dependent claim;
   - C. filing a **request for continued examination** ;
   - D. filing a notice of appeal;
   - E. filing a request for suspension of action;
   - F. mailing of a notice of allowance;
   - G. mailing of a final Office action;
   - H. completion of examination as defined in 37 CFR 41.102; or
   - I. abandonment of the application.

Telephone inquiries with regard to this decision should be directed to CHERYL GIBSON BAYLOR at (571)272-3213. In his/her absence, calls may be directed to Petition Help Desk at (571) 272-3282.

/CHERYL GIBSON BAYLOR/ Paralegal Specialist, OPET	

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/345,981	06/11/2021	Christopher M. SEATON	12914-003C2

CONFIRMATION NO. 6659

151692
Robert L. Wolter
Wolter Van Dyke Davis, PLLC
1900 Summit Tower Blvd.
SUITE 140
Orlando, FL 32810

PUBLICATION NOTICE

OC00000128786736

Title:CAMOUFLAGE MATERIAL FOR A HUNTING BLIND

Publication No.US-2021-0298288-A1
Publication Date:09/30/2021

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PTO/SB/08a (03-15)
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(Not for submission under 37 CFR 1.99)

Application Number	17345981
Filing Date	2021-06-11
First Named Inventor	Christopher M. SEATON
Art Unit	3636
Examiner Name	
Attorney Docket Number	12914-003C2

U.S.PATENTS Remove

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	5565265	A	1996-10-15	Rubin et al.	

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	1	20030207629	A1	2003-11-06	Sobieski et al.	

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	Examiner Name	
	Attorney Docket Number	12914-003C2

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Signature	/Robert L. Wolter/	Date (YYYY-MM-DD)	2021-08-31
Name/Print	ROBERT L. WOLTER	Registration Number	36972

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Electronic Acknowledgement Receipt

EFS ID:	43652894
Application Number:	17345981
International Application Number:	
Confirmation Number:	6659
Title of Invention:	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND
First Named Inventor/Applicant Name:	Christopher M. SEATON
Customer Number:	151692
Filer:	Robert L. Wolter./Cynthia Nugent
Filer Authorized By:	Robert L. Wolter.
Attorney Docket Number:	12914-003C2
Receipt Date:	31-AUG-2021
Filing Date:	11-JUN-2021
Time Stamp:	17:43:49
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	Information Disclosure Statement (IDS) Form (SB08)	12914003C2_SIDS.pdf	1034980 add28740186fb6e3e53708d25865c89765dbff5a	no	4

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Filing Date	2021-06-11
First Named Inventor	Christopher M. SEATON
Art Unit	3636
Examiner Name	
Attorney Docket Number	12914-003C2

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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	4308882		1982-01-05	Pusch	
	2	4425959		1984-01-17	Von Mosshaim	
	3	5842495		1998-12-01	Egnew	
	4	7040333		2006-05-09	Ransom	
	5	7568492		2009-08-04	Helmer	
	6	5261978		1993-11-16	Reynolds	
	7	6004649		1999-12-21	Nagata	
	8	6009673		2000-01-04	Adams	

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	Attorney Docket Number	12914-003C2

	9	6942065		2005-09-13	Price	
	10	7427433		2008-09-23	Li, et al.	
	11	7565909		2009-07-28	Reis, et al.	
	12	9163451		2015-10-20	Curry	
	13	6734125	B2	2004-05-11	Veiga	
	14	7081324	B1	2006-07-25	Hare et al.	

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	1	20030096546	A1	2003-05-22	Strength, et al.	
	2	20070006909	A1	2007-01-11	Lewis	
	3	20080083443	A1	2008-04-10	Eastman	

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	4	20090277094	A1	2009-11-12	Ward	
	5	20100031423	A1	2010-02-11	Cincotti, et al.	
	6	20100232029	A1	2010-09-16	Lewis, et al.	
	7	20120128890	A1	2012-05-24	Mirchev	
	8	20170245491	A1	2017-08-31	Seaton et al.	
	9	20170156340	A1	2017-06-08	Toreki et al.	
	10	20050048230	A1	2005-03-03	Dalvey et al.	

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	1	2017074394	WO	A1	2017-05-04	Hewlett-Packard Development Co., L.P.		

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	1	ECHOD Graphics Vinyl Mesh Printing–Vinyl Mesh Banner 37% Air Flow (https://web.archive.org/web/20140117130123/https://www.echodgraphics.com- /category1.asp?cid=101&iid=12103) (Year: 2014)	
	2	AKOVALI, Advances in Polymer Coated Textiles, 2012, Smithers Rapra Technology Ltd, UK	
	3	SINGHA, A Review on Coating & Lamination in Textiles: Processes and Applications, American Journal of Polymer Science, 2012, 39-49, 2(3), Scientific & Academic Publishing Co., Rosemead, CA, USA	

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Signature	/Robert L. Wolter/	Date (YYYY-MM-DD)	2021-06-24
Name/Print	ROBERT L. WOLTER	Registration Number	36972

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(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
4 May 2017 (04.05.2017)

WIPO | PCT

(10) International Publication Number
WO 2017/074394 A1

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C09D 11/101 (2014.01) *C09D 11/03* (2014.01)

(21) International Application Number:
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29 October 2015 (29.10.2015)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant: **HEWLETT-PACKARD DEVELOPMENT COMPANY, L.P.** [US/US]; 11445 Compaq Center Drive W., Houston, Texas 77070 (US).

(72) Inventors: **ZHOU, Zhang-Lin**; 16399 W. Bernardo Dr., San Diego, California 92127-1899 (US). **BI, Yubai**; 16399 W. Bernardo Dr., San Diego, California 92127-1899 (US). **BRANDSTEIN, Or**; 16399 W. Bernardo Dr., San Diego, California 92127-1899 (US). **STRAMEL, Rodney David**; 16399 W. Bernardo Dr., San Diego, California 92127-1899 (US). **LANE, Gregg A.**; 16399 W. Bernardo Dr., San Diego, California 92127-1899 (US).

(74) Agents: **LEMMON, Marcus** et al.; Hewlett-Packard Company, Intellectual Property Administration, 3404 E. Harmony Road, Mail Stop 35, Fort Collins, Colorado 80528-9599 (US).

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

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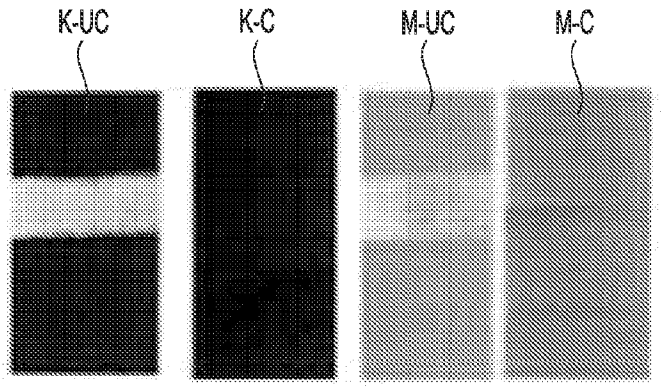


Fig-6

(57) Abstract: A photo curable ink composition includes a photo-reactive binder, a water soluble polymeric sensitizer, a water soluble photoinitiator, a colorant, and a balance of water. The water soluble polymeric sensitizer includes a functionalized anthrone moiety, a polyether chain, and an amide linkage or an ether linkage attaching one end of the polyether chain to the functionalized anthrone moiety. The water soluble photoinitiator having a formula (I) of: wherein n is any integer from 1 to 5 and M is a metal with a valence from 1 to 5.

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— *as to the identity of the inventor (Rule 4.17(i))*

Published:

— *with international search report (Art. 21(3))*

PHOTO CURABLE INK COMPOSITION

BACKGROUND

[0001] Curing of ink by radiation, and in particular by ultraviolet (UV) radiation, has become popular. UV curable inks often include monomers and photoiniatiors. These monomers are often those capable of free radical polymerization. The growing end of each polymer chain is a radical that reacts with additional monomers, transferring the radical to the end of the chain as each monomer is added. The photoinitiator is used to form the first radicals to begin the polymerization process. As an example, the photoinitiator is capable of absorbing UV light to generate radicals to react with the monomers.

[0002] Two types of photoinitiators can be used in UV curable compositions. Type I photoinitiators are unimolecular photoinitiators that undergo a hemolytic bond cleavage upon absorption of UV light, forming radicals. Type-II photoinitiators are bimolecular photoinitiators. Type-II photoinitiators are a system that includes a photoinitiator with a co-initiator (such as a synergist or sensitizer), which together can form radicals upon exposure to UV light. With type-II photoinitiators, radicals are generated in a bimolecular process that involves the reduction of the photoexcited compound(s) by hydrogen abstraction, by energy transfer, or by electron transfer.

BRIEF DESCRIPTION OF THE DRAWINGS

[0003] Features of examples of the present disclosure will become apparent by reference to the following detailed description and drawings, in which like reference numerals correspond to similar, though perhaps not identical, components.

[0004] Fig. 1 is a graph illustrating the stability of a trimethylbenzoylphenylphosphinic acid sodium salt (TPO-Na) photoinitiator disclosed herein;

[0005] Fig. 2 is a graph illustrating the stability of a comparative photoinitiator;

[0006] Fig. 3 is a graph illustrating the UV-Visible Absorption of a trimethylbenzoylphenylphosphinic acid sodium salt (TPO-Na) photoinitiator and an example of the water soluble polymeric sensitizer disclosed herein;

[0007] Fig. 4 is a black and white representation of a colored photograph of cured and uncured samples of six different cyan inks after a wet rub test;

[0008] Fig. 5 is a black and white representation of a colored photograph of cured and uncured samples of six different cyan inks after a wet rub test;

[0009] Fig. 6 is a black and white representation of a colored photograph of an uncured black ink, a cured black ink, an uncured magenta ink, and a cured magenta ink after an immediate rub test;

[0010] Fig. 7 is a black and white representation of a colored photograph of the uncured black ink, the cured black ink, the uncured magenta ink, and the cured magenta ink after a wet rub test; and

[0011] Fig. 8 is a black and white representation of a colored photograph of an uncured cyan ink and a cured cyan ink after a wet rub test.

DETAILED DESCRIPTION

[0012] The inkjet printing industry uses various types of inks, such as oil-based inks, solvent-based (non-aqueous) inks, water-based (aqueous) inks, and solid inks which are melted in preparation for dispensing. Solvent-based inks are fast drying, and as a result, are widely used for industrial printing. When solvent-based inks containing binders and other ingredients are jetted onto a substrate, the solvent(s) partially or fully evaporate from the ink, leaving the binder and other ingredients, such as pigment particles, on the printed substrate in the form of a dry film. During the drying process, the solvents, which are often volatile organic compounds (VOC), emit undesirable vapors. Vapor production can increase greatly with higher printing speeds or for wide format images, where large amounts of ink are deposited onto a substrate. As a result of this and other concerns, efforts have been made to prepare water-based inks.

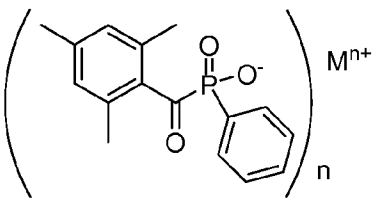
[0013] However, radiation-curable (or photo-curable) water-based ink compositions are noticeably limited among available options due, at least in part, to their specific

formulation properties and available photoinitiators. For example, many photoinitiators are water insoluble, and thus are difficult to formulate in a water-based ink composition. For another example, some photoinitiators decompose in the water-based ink vehicle, and thus are unstable in a water-based ink composition. For still another example, some photoinitiators undesirably migrate throughout cured materials (e.g., and thus can leach out of the cured material). For yet a further example, some photoinitiators are not absorbing at a 395 nm wavelength (which is common wavelength for UV LED lamps). Still further, some radiation-curable (or photo-curable) water-based ink compositions do not cure efficiently.

[0014] Examples of the photo curable ink composition disclosed herein are aqueous inks that include examples of a water soluble photoinitiator and a water soluble polymeric sensitizer. Together, the water soluble photoinitiator(s) and water soluble polymeric sensitizer(s) form a photo initiating system that is chemically stable (i.e., resistant to decomposition) in the basic conditions of the ink, resists migration in and from the cured ink film, is active at the 395 nm wavelength, and exhibits curing efficiency comparable with highly-reactive non-water soluble photoinitiators (such as IRGACURE® 819 (BASF Corp.)).

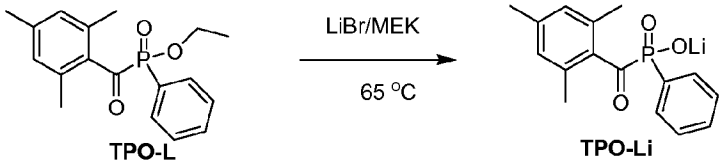
[0015] In addition to the water soluble photoinitiator(s) and water soluble polymeric sensitizer(s), the photo curable ink composition may include a photo-reactive binder (which undergoes cross-linking polymerization during curing), a colorant, and water. The photo curable ink composition may also include other additives, which will be described in more detail below.

[0016] The water soluble photoinitiator is a trimethylbenzoylphenylphosphinic acid metal salt (i.e., TPO salt) having a formula (I) of:

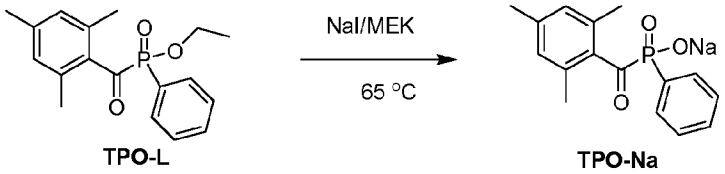


where n is any integer from 1 to 5 and M is a metal with a valence from 1 to 5. Examples of suitable metals include Li, Na, K, Cs, Rb, Be, Mg, Ca, Ba, Al, Ge, Sn, Pb, As, and Sb.

[0017] The TPO salt may be formed from ethyl (2,4,6-trimethylbenzoyl) phenylphosphinate (TPO-L) and a metal salt. The ethyl (2,4,6-trimethylbenzoyl) phenylphosphinate may be added to a suitable solvent (e.g., methyl ethyl ketone (MEK)) to form a solution, and then the metal salt may be added to the solution. The solution may be heated and stirred at a predetermined temperature for a predetermined time to allow the reaction to take place. As a result of the reaction, a solid TPO salt forms. This solid may be collected, washed, and dried. Two example synthetic pathways for forming a lithium TPO salt (TPO-Li) and a sodium TPO salt (TPO-Na) are shown in schemes A and B:



(A)



(B)

[0018] For scheme A, from about 0.1 mol of ethyl (2,4,6-trimethylbenzoyl) phenylphosphinate is introduced into 600 ml of ethyl methyl ketone (MEK). Then 4 equivalents of 0.4 mol of lithium bromide is added to the solution. After about 15 minutes, the homogenous solution is heated and stirred for 24 hours. In an example, the solution is heated in a 65°C oil bath on a hotplate. A white solid (in this example TPO-Li) is formed. The mixture can be cooled to room temperature, and the white solid collected by vacuum filtration or some other suitable process. The white solid may be washed with petroleum ether (250 ml, three times) using stirring for about 30 minutes

inside a beaker. The white solid may then be dried in an oven. As an example, the TPO-Li yield may be 89%.

[0019] For scheme B, from about 0.4 mol of ethyl (2,4,6-trimethylbenzoyl) phenylphosphinate is introduced into 600 ml of ethyl methyl ketone (MEK). Then 1.1 equivalents of 0.46 mol of sodium iodide is added to the solution. After about 15 minutes, the homogenous solution is heated and stirred for 24 hours. In an example, the solution is heated in a 65°C oil bath on a hotplate. A white solid (in this example TPO-Na) is formed. The mixture can be cooled to room temperature, and the white solid collected by vacuum filtration or some other suitable process. The white solid may be washed with petroleum ether (500 ml, three times) using stirring inside a beaker. The white solid may then be dried in an oven. As an example, the TPO-Na yield may be 90%.

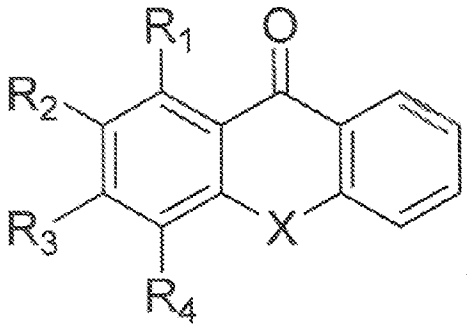
[0020] The water soluble photoinitiator may be present in the photo curable ink composition in an amount ranging from about 0.1 wt% to about 10 wt% based on a total wt% of the photo curable ink composition.

[0021] The solubility of the water soluble photoinitiator disclosed herein is high. In one example, the water soluble photoinitiator can have a water solubility of at least 0.1 wt%. When the water solubility is at least 0.1 wt%, it means that of the total wt% of the water soluble photoinitiator added to water, at least 0.1 wt% of the total is water soluble. In some instances, the water soluble photoinitiator may have a water solubility of at least 0.5 wt%. In some instances, the water soluble photoinitiator may have a water solubility up to about 20 wt%. It is believed that higher water solubility, potentially up to 100 wt%, may also be achieved.

[0022] The water soluble photoinitiator disclosed herein is also chemically stable in the photo curable ink composition (at basic conditions, i.e., a pH greater than 7 to about 14) because it does not decompose. Additionally, while the water soluble photoinitiator alone may not be highly reactive, in combination with the water soluble polymeric sensitizer disclosed herein, the resulting photo initiating system is highly reactive and exhibits desirable curing efficiency.

[0023] The water soluble polymeric sensitizer includes a functionalized anthrone moiety, a polyether chain, and an amide linkage or an ether linkage attaching one end of the polyether chain to the functionalized anthrone moiety. Each component of the polymeric sensitizer is discussed in greater detail below.

[0024] One portion of the polymeric sensitizer is the functionalized anthrone moiety. As used herein, the "functionalized anthrone moiety" has the formula:



where X can be S, O, or NH. When X = S, the functionalized anthrone moiety is thioxanthrenone, when X = O, the functionalized anthrone moiety is xanthenone, and when X = NH, the functionalized anthrone moiety is acridinone. R_1, R_2, R_3, and R_4 are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a halogen atom, $-NO_2$, $-O-R_d$, $-CO-R_d$, $-CO-O-R_d$, $-O-CO-R_d$, $-CO-NR_dR_e$, $-NR_dR_e$, $-NR_d-CO-R_e$, $-NR_d-CO-O-R_e$, $-NR_d-CO-NR_eR_f$, $-SR_d$, $-SO-R_d$, $-SO_2-R_d$, $-SO_2-O-R_d$, $-SO_2NR_dR_e$ and a perfluoroalkyl group; and R_d, R_e, and R_f are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted aralkyl group.

[0025] The other portion of the polymeric sensitizer disclosed herein includes polyether chain(s). Suitable examples of the polyether chains include polyethylene glycol or methyl substituted polyethylene glycol. In an example, one end of the

polyether chain is attached to the functionalized anthrone moiety through an amide linkage or an ether linkage. The molecular weight of the polyether chain can, in some cases, affect the solubility of the final polymeric sensitizer. For example, a higher ratio of oxygen atoms to carbon atoms in the polyether chain tends to render the polymeric sensitizer more water soluble. The molecular weight of the polyether chain can also affect the degree to which the polymeric sensitizer can migrate in the cured ink. Longer polyether chains can make it more difficult for the polymeric sensitizer to move within the cured ink, thus decreasing migration. Therefore, the molecular weight and length of the polyether chain can be selected to provide good water solubility and low or no migration of the polymeric sensitizer in cured ink.

[0026] As noted above, the amide linkage or the ether linkage connects the polyether chain to the functionalized anthrone moiety. It has been found that that the polymeric sensitizer disclosed herein is hydrolytically stable due to the amide or ether linkage, especially when compared to sensitizers including an ester linkage. As such, the amide or ether linkage improves the stability of the polymeric sensitizer in the water based photo curable ink composition.

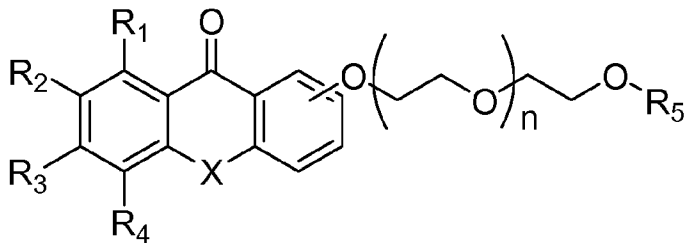
[0027] As used herein, "amide linkage" refers to either an amide group or an amide group with a bridging group (shown in some formulas as "Y") attached to the carbon atom of the amide group. The amide linkage connects one of the end benzene rings of the functionalized anthrone moiety with the polyether chain. The polyether chain may be directly bonded to the nitrogen atom of the amide group, and the carbon atom of the amide group may either be directly bonded, or linked through the bridging group to a carbon atom in the one benzene ring of the functionalized anthrone moiety. It is to be understood that the amide linkage may be attached to the functionalized anthrone moiety at different positions on the one benzene ring. For example, the carbon atom of the amide group, or the carbon atom of the bridging group may be attached to the carbon atom at the ortho position, meta position, or the para position of the ring. The position at which the amide linkage is attached depends, in part, on the starting material used as the functionalized anthrone moiety when forming the polymeric sensitizer. The

amide linkage can be formed by a suitable reaction, such as a substitution reaction or a condensation reaction.

[0028] As used herein, "ether linkage" refers to the ether group (i.e., R'-O-R") that connects one of the end benzene rings of the functionalized anthrone moiety with the polyether chain. R' and R" of the ether linkage may be part of the functionalized anthrone moiety and the polyether chain, respectively. For example, the R' of the ether linkage may be one of the carbon atoms in the one benzene ring and the R" of the ether linkage may be the carbon atom at one end of the polyether chain. It is to be understood that the ether linkage may be attached to the functionalized anthrone moiety at different positions on the one benzene ring. For example, the R' carbon atom of the ether linkage may be the carbon atom at the ortho position, meta position, or the para position of the ring. The position at which the ether linkage is attached depends, in part, on the starting material used as the functionalized anthrone moiety when forming the polymeric sensitizer. The ether linkage can be formed by a suitable reaction, such as a substitution reaction.

[0029] In some examples, the functionalized anthrone moiety, polyether chain, and amide or ether linkage do not form the entire polymeric sensitizer. In some examples, the polymeric sensitizer may include additional functionalized anthrone moieties and/or polyether chains. In some other examples, the polymeric sensitizer may have functional group(s) attached to an opposed end of the polyether chain.

[0030] In one example, the polymeric sensitizer has a formula (II) of:

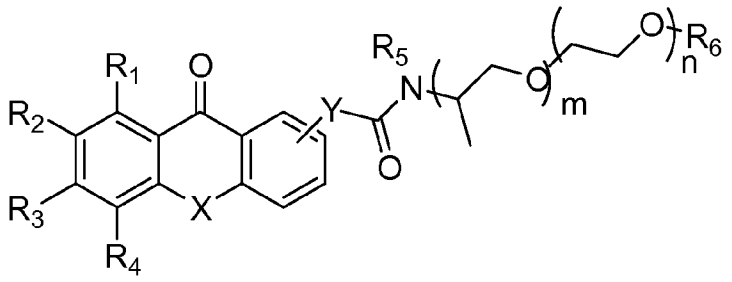


.

[0031] In formula (II), R_1, R_2, R_3, R_4, and R_5 are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl

group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a halogen atom, $-NO_2$, $-O-R_d$, $-CO-R_d$, $-CO-O-R_d$, $-O-CO-R_d$, $-CO-NR_dR_e$, $-NR_dR_e$, $-NR_d-CO-R_e$, $-NR_d-CO-O-R_e$, $-NR_d-CO-NR_eR_f$, $-SR_d$, $-SO-R_d$, $-SO_2-R_d$, $-SO_2-O-R_d$, $-SO_2NR_dR_e$ and a perfluoroalkyl group. R_d, R_e, and R_f are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted aralkyl group. Some examples of suitable alkyl groups include methyl, ethyl, propyl, isopropyl, butyl, isobutyl, pentyl, hexyl, etc. One example of a suitable alkene group is an ethylene group. Some examples of suitable aryl groups include phenyl, phenylmethyl, etc. In formula (II), X is O, S, or NH and the polyether chain has n number of repeating monomer units, where n ranges from 1 to 200. As depicted in formula (II), the linkage is an ether linkage.

[0032] In another example, the polymeric sensitizer has a formula (III) of:



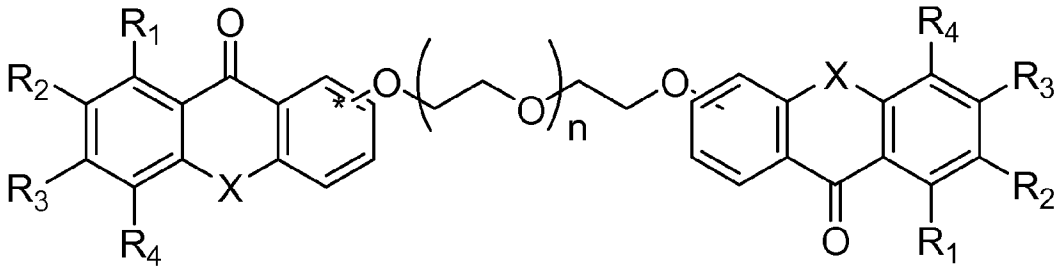
.

In formula (III), R_1, R_2, R_3, R_4, R_5, and R_6 are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a halogen atom, $-NO_2$, $-O-R_d$, $-CO-R_d$, $-CO-O-R_d$, $-O-CO-R_d$, $-CO-NR_dR_e$, $-NR_dR_e$, $-NR_d-CO-R_e$, $-NR_d-CO-O-R_e$, $-NR_d-CO-NR_eR_f$, $-SR_d$, $-SO-R_d$, $-SO_2-R_d$, $-SO_2-O-R_d$, $-SO_2NR_dR_e$ and a perfluoroalkyl group. R_d, R_e, and R_f are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, and a

substituted or unsubstituted aralkyl group. Some examples of suitable alkyl groups include methyl, ethyl, propyl, isopropyl, butyl, isobutyl, pentyl, hexyl, etc. One example of a suitable alkene group is an ethylene group. Some examples of suitable aryl groups include phenyl, phenylmethyl, etc. In formula (III), X is O, S, or NH, Y is a bond, $(CH_2)_q$, or $O(CH_2)_q$, where q is any integer from 1 to 100, the first polyether chain has m number of repeating monomer units, where m ranges from 1 to 200, and the second polyether chain has n number of repeating monomer units, where n ranges from 1 to 200. As depicted in formula (III), the linkage is an amide linkage.

[0033] In other examples, the polymeric sensitizer includes an additional functionalized anthrone moiety attached to the opposed end of the polyether chain through an additional ether linkage or an additional amide linkage.

[0034] In one example, the polymeric sensitizer has the formula (IV) of:

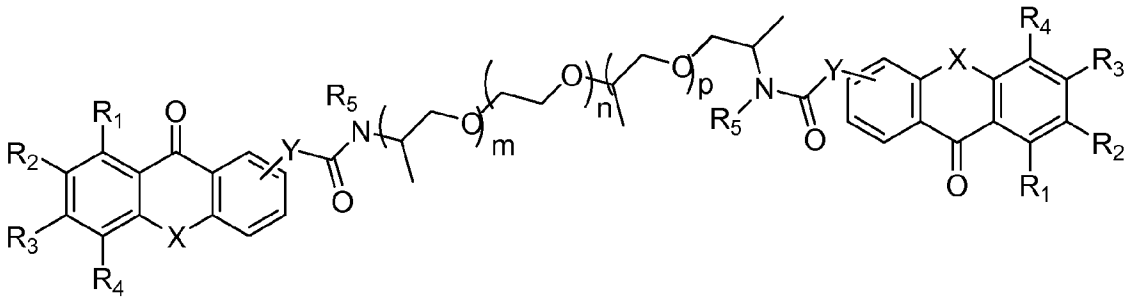


which includes the additional functionalized anthrone moiety attached to the opposed end of the polyether chain through the additional ether linkage.

[0035] In formula (IV), R_1, R_2, R_3, and R_4 are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a halogen atom, $-NO_2$, $-O-R_d$, $-CO-R_d$, $-CO-O-R_d$, $-O-CO-R_d$, $-CO-NR_dR_e$, $-NR_dR_e$, $-NR_d-CO-R_e$, $-NR_d-CO-O-R_e$, $-NR_d-CO-NR_eR_f$, $-SR_d$, $-SO-R_d$, $-SO_2-R_d$, $-SO_2-O-R_d$, $-SO_2NR_dR_e$ and a perfluoroalkyl group. R_d, R_e, and R_f are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or

unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted aralkyl group. As mentioned above, some examples of suitable alkyl groups include methyl, ethyl, propyl, isopropyl, butyl, isobutyl, pentyl, hexyl, etc.; an example of a suitable alkene group is an ethylene group; and some examples of suitable aryl groups include phenyl, phenylmethyl, etc. It is to be understood that these groups may be used in any of the formulas disclosed herein. In formula (IV), X is O, S, or NH and the polyether chain has n number of repeating monomer units, where n ranges from 1 to 200.

[0036] In another example, the polymeric sensitizer has the formula (V) of:



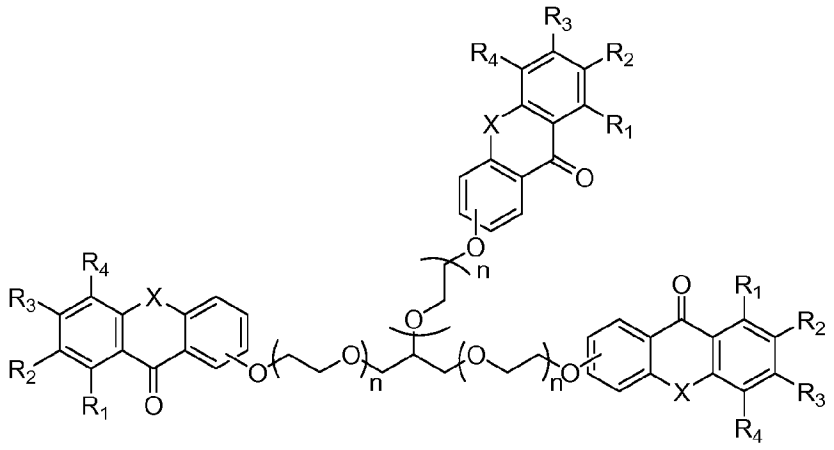
which includes the additional functionalized anthrone moiety attached to the opposed end of the polyether chain through the additional amide linkage.

[0037] In formula (V), R_1, R_2, R_3, R_4, and R_5 are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a halogen atom, $-NO_2$, $-O-R_d$, $-CO-R_d$, $-CO-O-R_d$, $-O-CO-R_d$, $-CO-NR_dR_e$, $-NR_dR_e$, $-NR_d-CO-R_e$, $-NR_d-CO-O-R_e$, $-NR_d-CO-NR_eR_f$, $-SR_d$, $-SO-R_d$, $-SO_2-R_d$, $-SO_2-O-R_d$, $-SO_2NR_dR_e$ and a perfluoroalkyl group. R_d, R_e, and R_f are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted aralkyl group. As mentioned above, some examples of suitable alkyl groups include methyl, ethyl, propyl, isopropyl, butyl, isobutyl, pentyl,

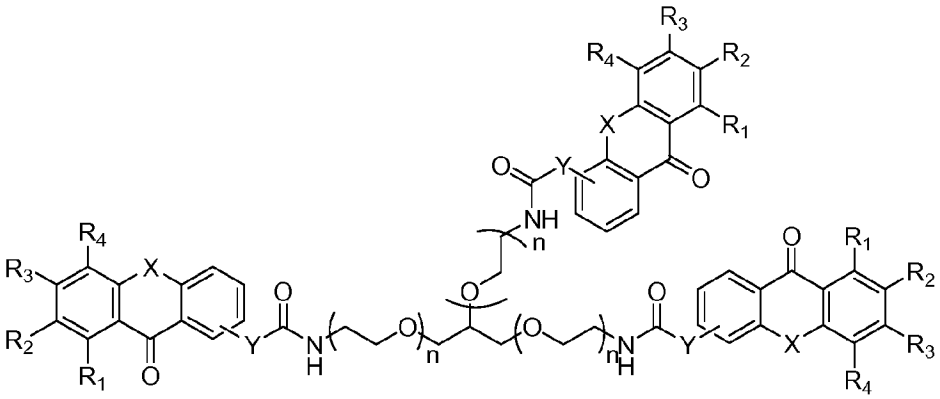
hexyl, etc.; an example of a suitable alkene group is an ethylene group; and some examples of suitable aryl groups include phenyl, phenylmethyl, etc. In formula (V), X is O, S, or NH, Y is a bond, $(CH_2)_q$, or $O(CH_2)_q$, where q is any integer from 1 to 100, the first polyether chain has m number of repeating monomer units, where m ranges from 1 to 200, the second polyether chain has n number of repeating monomer units, where n ranges from 1 to 200, and the third polyether chain has p number of repeating monomer units, where p ranges from 1 to 200.

[0038] In yet another example, the polymeric sensitizer includes first, second, and third functionalized anthrone moieties. Additionally, in this example, the first, second, and third functionalized anthrone moieties are each individually and respectively attached to first, second, and third amide or ether linkages. The first, second, and third amide or ether linkages are attached to first, second, and third polyether chains, respectively. In an example, the first amide or ether linkage attaches one end of the first polyether chain to the first functionalized anthrone moiety. The opposed end of the first polyether chain is attached to each of the second and third polyether chains through carbon atom(s).

[0039] Two examples of the polymeric sensitizer having three functionalized anthrone moieties respectively have the formulas (VI, with three ether linkages) and (VII, with three amide linkages):



(VI)



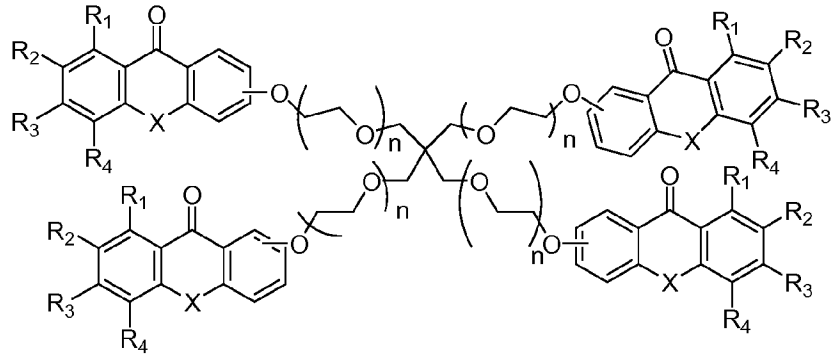
(VII).

[0040] In formulas (VI) and (VII), R_1, R_2, R_3 and R_4 are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a halogen atom, $-NO_2$, $-O-R_d$, $-CO-R_d$, $-CO-O-R_d$, $-O-CO-R_d$, $-CO-NR_dR_e$, $-NR_dR_e$, $-NR_d-CO-R_e$, $-NR_d-CO-O-R_e$, $-NR_d-CO-NR_eR_f$, $-SR_d$, $-SO-R_d$, $-SO_2-R_d$, $-SO_2-O-R_d$, $-SO_2NR_dR_e$ and a perfluoroalkyl group. R_d, R_e, and R_f are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted aralkyl group. As mentioned above, some examples of suitable alkyl groups include methyl, ethyl, propyl, isopropyl, butyl, isobutyl, pentyl, hexyl, etc.; one example of a suitable alkene group is an ethylene group; and some examples of suitable aryl groups include phenyl, phenylmethyl, etc. In each of formulas (VI) and (VII), each of the polyether chains has n number of repeating monomer units, where n ranges from 1 to 200, and X is O, S, or NH. In formula (VII), Y is a bond, $(CH_2)_q$, or $O(CH_2)_q$, where q is any integer from 1 to 100.

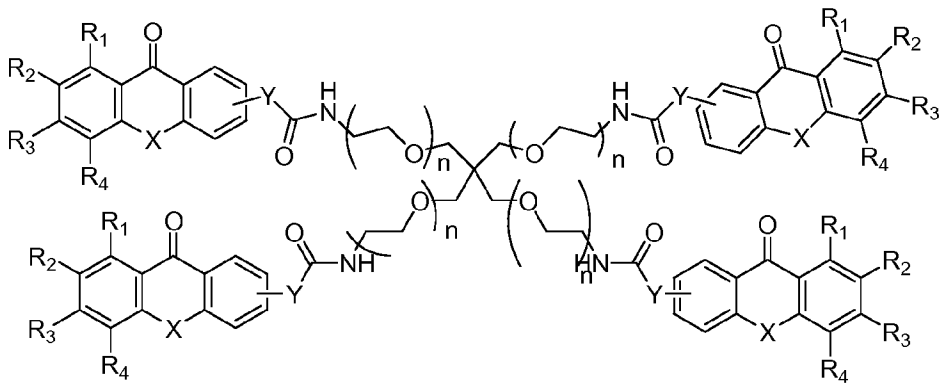
[0041] Still further, in another example, the polymeric sensitizer includes first, second, third, and fourth functionalized anthrone moieties. In this example, the first, second, third, and fourth functionalized anthrone moieties are each individually and

respectively attached to first, second, third, and fourth amide or ether linkages. The first, second, third, and fourth amide or ether linkages are attached to first, second, third, and fourth polyether chains, respectively. In an example, the first amide or ether linkage attaches one end of the first polyether chain to the first functionalized anthrone moiety. The opposed end of the first polyether chain is attached to each of the second, third, and fourth polyether chains through carbon atom(s).

[0042] Two examples of the polymeric sensitizer having four functionalized anthrone moieties respectively have the formulas (VIII, with four ether linkages) and (IX, with four amide linkages):



(VIII)



(IX)

[0043] In formulas (VIII) and (IX), R_1, R_2, R_3 and R_4 are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a halogen atom, $-NO_2$, $-O-R_d$, $-CO-R_d$, $-CO-O-R_d$,

-O-CO-R_d, -CO-NR_dR_e, -NR_dR_e, -NR_d-CO-R_e, -NR_d-CO-O-R_e, -NR_d-CO-NR_eR_f, -SR_d, -SO-R_d, -SO_2-R_d, -SO_2-O-R_d, -$SO_2NR_dR_e$ and a perfluoroalkyl group. R_d, R_e, and R_f are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted aralkyl group. As mentioned above, some examples of suitable alkyl groups include methyl, ethyl, propyl, isopropyl, butyl, isobutyl, pentyl, hexyl, etc.; one example of a suitable alkene group is an ethylene group; and some examples of suitable aryl groups include phenyl, phenylmethyl, etc. In each of formulas (VIII) and (IX), each of the polyether chains has n number of repeating monomer units, where n ranges from 1 to 200, and X is O, S, or NH. In formula (IX), Y is a bond, $(CH_2)_q$, or $O(CH_2)_q$, where q is any integer from 1 to 100.

[0044] In each of formulas II through XI, it is noted that the polyether chain(s) may be connected to different positions of the one benzene ring of the functionalized anthrone moiety or moieties.

[0045] The molecular weight of the polymeric sensitizer can affect its degree of migration in cured ink. For example, a polymeric sensitizer with a weight average molecular weight (M_w) of about 500 or more can have reduced migration in cured ink compared with a small molecule synergist (e.g., such as methyldiethanolamine, trimethylamine, and its analogs). Migration can be further reduced by increasing the M_w of the polymeric sensitizer to about 1000 or more. In one example, the polymeric sensitizer can have a M_w ranging from about 500 to about 5000. Polyether chains (e.g., polyethylene glycols or methyl substituted polyethylene glycols) of various molecular weights are available, allowing for the production of polymeric sensitizers with various molecular weights. In some examples, the polyethylene glycol chain can be selected from PEG 300, PEG 550, PEG 600, PEG 750, PEG 1000, and PEG 2000.

[0046] The molecular weight of the polymeric sensitizer can also be changed (in some instances minimally) by changing or adding R groups to the functionalized anthrone moiety.

[0047] The molecular weight of the polymeric sensitizer can also affect the synergist's solubility in water. As previously described, the molecular weight of the polymeric sensitizer may be affected by the polyether chain(s). Although the functionalized anthrone moiety(ies) alone can be insoluble in water, adding the water soluble polyether chain(s) can make the entire polymeric sensitizer water soluble. As the polyether chain increases, the molecular weight increases, and the water solubility increases. In such cases, the soluble polyether chain(s) can have a sufficient molecular weight so that its solubility properties overcome the insolubility of the functionalized anthrone moiety(ies). For example, when one monomer (e.g., $-CH_2CH_2O-$) is included in the polyethylene glycol chain (e.g., n = 1 in formula (II)), the polymeric sensitizer is minimally water soluble, and as the number of monomers increases, the water solubility of the polymeric sensitizer increases. In addition, water soluble R groups can be included or added to the functionalized anthrone moiety(ies) to increase the solubility of the polymeric sensitizer. In one example, the polymeric sensitizer can have a water solubility of at least 0.1 wt%. When the water solubility is at least 0.1 wt%, it means that of the total wt% of the polymeric sensitizer added to water, at least 0.1 wt% of the total is water soluble. In some instances, the polymeric sensitizer may have a water solubility ranging from 0.1 wt% to 20 wt%. It is believed that higher water solubility, potentially up to 100 wt%, may also be achieved.

[0048] The water soluble polymeric sensitizer is present in the photo curable ink composition in an amount ranging from about 0.1 wt% to about 10 wt% based on a total wt% of the photo curable ink composition.

[0049] As mentioned above, the photo curable ink composition also includes a photo-reactive binder. The photo-reactive binder may be any ultraviolet (UV) polymerizable compound having a polymerizable group that is radically polymerized by UV rays. The polymerizable group may be include an ethylenically unsaturated double bond, specific examples of which may include an acryloyl group, a methacryloyl group, a vinyl group, a vinyl ether group, a maleic anhydride group, and a substituted maleimide group.

[0050] The ultraviolet polymerizable compound may be a monomer, an oligomer, or a mixture thereof. The ultraviolet polymerizable compound may be a water-soluble ultraviolet polymerizable compound or a water-insoluble ultraviolet polymerizable compound. For the ultraviolet polymerizable compound, "water-soluble" means that the compound is dissolved in an amount of 1 part by mass or more (e.g., 10 parts by mass or more) based on 100 parts by mass of water at 25°C. For the ultraviolet polymerizable compound, "water insoluble" means that the compound is dissolved in an amount of less than 1 part by mass based on 100 parts by mass of water at 25°C.

[0051] Some examples of the water-soluble ultraviolet polymerizable compound include radical polymerizable monomers, such as acryloyl morpholine (ACMO), hydroxyethyl acrylamide (HEAA), diacetone acrylamide, N-vinyl-2-pyrrolidone, N-vinyl-formamide, vinyl naphthalene sulfonic acid, hydroxyethyl(meth)acrylate, methoxypolyethylene glycolmethacrylate, methoxy polyethylene glycolacrylate, an ester of succinic anhydride and 2-hydroxyethyl(meth)acrylate, and an ester of orthophthalic anhydride and 2-hydroxyethyl-(meth)acrylate. Other examples of the water-soluble ultraviolet polymerizable compound include radical polymerizable monomers (such as (meth)acrylate ester of polyhydric alcohol, and (meth) acrylate ester of glycidyl ether (derived from polyhydric alcohol)), or an oligomer obtained by polymerizing water soluble ultraviolet polymerizable monomers to a required degree of polymerization may also be exemplified.

[0052] In still other examples, the photo-reactive binder can include a combination of a UV or LED curable polyurethane and hydrophobic radiation-curable monomer(s). In one example, the photo-reactive binder can include a water dispersible (meth)acrylated polyurethane, such as NEORAD® R-441 by NeoResins (Avecia). Other examples of UV reactive binders can include UCECOAT® 7710, UCECOAT® 7655 (available from Allnex), NEORAD® R-440, NEORAD® R-441, NEORAD® R-447, NEORAD® R-448 (available from DSM NeoResins), BAYHYDROL® UV 2317, BAYHYDROL® UV VP LS 2348 (available from Bayer), Lux 260, Lux 430, Lux 399, Lux 484 (available from Alberdingk Boley), LAROMER® LR 8949, LAROMER® LR 8983, LAROMER® PE

22WN, LAROMER® PE 55WN, or LAROMER® UA 9060 (available from BASF), and experimental UV curable polyurethane dispersions from the suppliers.

[0053] Any of the photo-reactive binders may be used either alone or in combination of two or more kinds thereof. The photo-reactive binder is present in the photo curable ink composition in an amount ranging from about 5 wt% to about 70 wt%, based on the wt% of the ink composition. In other example, the amount of the photo-reactive binder ranges from about 10 wt% to about 60 wt%, or from about 15 wt% to about 50 wt%, based on the wt% of the ink composition.

[0054] As mentioned above, the photo curable ink composition also includes a colorant. The colorant in the photo curable ink composition may be a pigment or a dye. In some examples, the colorant can be present in an amount from about 0.5 wt% to about 15 wt% based on a total wt% of the photo curable ink composition. In one example, the colorant can be present in an amount from about 1 wt% to about 10 wt%. In another example, the colorant can be present in an amount from about 5 wt% to about 10 wt%.

[0055] The volume average particle size of the colorant may range from 10 nm to 1,000 nm. The volume average particle size of the colorant refers to a particle size of a colorant itself, or a particle size of a colorant with an additive, such as a dispersant, adhered to the colorant.

[0056] Example colors of the colorant are black, cyan, magenta, yellow, red, green, blue, brown, white, or metallic lusters (such as gold and silver). The colorants may also be colorless of lightly-colored.

[0057] The colorant may be a particle obtained by fixing a dye or a pigment onto the surface of silica, alumina, or polymer beads as a core, an insoluble lake product of a dye, a colored emulsion, and a colored latex.

[0058] In some examples, the colorant may be a dye. As used herein, “dye” refers to compounds or molecules that absorb electromagnetic radiation or certain wavelengths thereof. Dyes can impart a visible color to the ink composition if the dyes absorb wavelengths in the visible spectrum. The dye can be nonionic, cationic, anionic, or a mixture of nonionic, cationic, and/or anionic dyes. The dye can be a hydrophilic anionic

dye, a direct dye, a reactive dye, a polymer dye or an oil soluble dye. Specific examples of dyes that may be used include Sulforhodamine B, Acid Blue 113, Acid Blue 29, Acid Red 4, Rose Bengal, Acid Yellow 17, Acid Yellow 29, Acid Yellow 42, Acridine Yellow G, Acid Yellow 23, Acid Blue 9, Nitro Blue Tetrazolium Chloride Monohydrate or Nitro BT, Rhodamine 6G, Rhodamine 123, Rhodamine B, Rhodamine B Isocyanate, Safranine O, Azure B, and Azure B Eosinate, which are available from Sigma-Aldrich Chemical Company (St. Louis, Mo.). Examples of anionic, water-soluble dyes include Direct Yellow 132, Direct Blue 199, Magenta 377 (available from Ilford AG, Switzerland), alone or together with Acid Red 52. Examples of water-insoluble dyes include azo, xanthene, methine, polymethine, and anthraquinone dyes. Specific examples of water-insoluble dyes include ORASOL® Blue GN, ORASOL® Pink, and ORASOL® Yellow dyes available from BASF Corp. Black dyes may include Direct Black 154, Direct Black 168, Fast Black 2, Direct Black 171, Direct Black 19, Acid Black 1, Acid Black 191, Mobay Black SP, and Acid Black 2.

[0059] In other examples, the colorant may be a pigment. As used herein, "pigment" generally includes organic or inorganic pigment colorants, magnetic particles, aluminas, silicas, and/or other ceramics, organo-metallics or other opaque particles, whether or not such particulates impart color. Thus, although the present description primarily illustrates the use of pigment colorants, the term "pigment" can be used more generally to describe pigment colorants, as well as other pigments such as organometallics, ferrites, ceramics, etc.

[0060] Suitable pigments include the following, which are available from BASF Corp.: PALIOGEN® Orange, HELIOGEN® Blue L 6901F, HELIOGEN® Blue NBD 7010, HELIOGEN® Blue K 7090, HELIOGEN® Blue L 7101F, PALIOGEN® Blue L 6470, HELIOGEN® Green K 8683, HELIOGEN® Green L 9140, CHROMOPHTAL® Yellow 3G, CHROMOPHTAL® Yellow GR, CHROMOPHTAL® Yellow 8G, IGRAZIN® Yellow 5GT, and IGRALITE® Rubine 4BL. The following pigments are available from Degussa Corp.: Color Black FWI, Color Black FW2, Color Black FW2V, Color Black 18, Color Black, FW200, Color Black 5150, Color Black S160, and Color Black 5170. The following black pigments are available from Cabot Corp.: REGAL® 400R, REGAL®

330R, REGAL® 660R, MOGUL® L, BLACK PEARLS® L, MONARCH® 1400, MONARCH® 1300, MONARCH® 1100, MONARCH® 1000, MONARCH® 900, MONARCH® 880, MONARCH® 800, and MONARCH® 700. The following pigments are available from Orion Engineered Carbons GMBH: PRINTEX® U, PRINTEX® V, PRINTEX® 140U, PRINTEX® 140V, PRINTEX® 35, Color Black FW 200, Color Black FW 2, Color Black FW 2V, Color Black FW 1, Color Black FW 18, Color Black S 160, Color Black S 170, Special Black 6, Special Black 5, Special Black 4A, and Special Black 4. The following pigment is available from DuPont: TI-PURE® R-101. The following pigments are available from Heubach: MONASTRAL® Magenta, MONASTRAL® Scarlet, MONASTRAL® Violet R, MONASTRAL® Red B, and MONASTRAL® Violet Maroon B. The following pigments are available from Clariant: DALAMAR® Yellow YT-858-D, Permanent Yellow GR, Permanent Yellow G, Permanent Yellow DHG, Permanent Yellow NCG-71, Permanent Yellow GG, Hansa Yellow RA, Hansa Brilliant Yellow 5GX-02, Hansa Yellow-X, NOVOPERM® Yellow HR, NOVOPERM® Yellow FGL, Hansa Brilliant Yellow 10GX, Permanent Yellow G3R-01, HOSTAPERM® Yellow H4G, HOSTAPERM® Yellow H3G, HOSTAPERM® Orange GR, HOSTAPERM® Scarlet GO, and Permanent Rubine F6B. The following pigments are available from Sun Chemical: QUINDO® Magenta, INDOFAST® Brilliant Scarlet, QUINDO® Red R6700, QUINDO® Red R6713, INDOFAST® Violet, L74-1357 Yellow, L75-1331 Yellow, L75-2577 Yellow, and LHD9303 Black. The following pigments are available from Birla Carbon: RAVEN® 7000, RAVEN® 5750, RAVEN® 5250, RAVEN® 5000 Ultra® II, RAVEN® 2000, RAVEN® 1500, RAVEN® 1250, RAVEN® 1200, RAVEN® 1190 Ultra®. RAVEN® 1170, RAVEN® 1255, RAVEN® 1080, and RAVEN® 1060. The following pigments are available from Mitsubishi Chemical Corp.: No. 25, No. 33, No. 40, No. 47, No. 52, No. 900, No. 2300, MCF-88, MA600, MA7, MA8, and MA100. The colorant may be a white pigment, such as titanium dioxide, or other inorganic pigments such as zinc oxide and iron oxide.

[0061] Specific examples of a cyan color pigment may include C.I. Pigment Blue -1, -2, -3, -15, -15:1,-15:2, -15:3, -15:4, -16, -22, and -60. Specific examples of a magenta color pigment may include C.I. Pigment Red -5, -7, -12, -48, -48:1, -57, -112,-122, -123,

-146, -168, -177, -184, -202, and C.I. Pigment Violet-19. Specific examples of a yellow pigment may include C.I. Pigment Yellow -1, -2, -3, -12, -13, -14, -16, -17, -73, -74, -75, -83, -93, -95, -97, -98, -114, -128, -129, -138, -151,-154, and -180. While several examples have been given herein, it is to be understood that any other pigment or dye can be used that is useful in modifying the color of the UV curable ink.

[0062] The pigment can be self-dispersed with a polymer, an oligomer, or a small molecule. The self-dispersed pigment refers to a pigment having water-solubilizing groups on the pigment surface, which can be dispersed in water even without a separate dispersant. The self-dispersed pigment may be obtained by carrying out surface modification treatments, such as an acid/base treatment, a coupling agent treatment, a polymer graft treatment, a plasma treatment, or an oxidation/reduction treatment, on a pigment. Examples of the self-dispersed pigment may include, in addition to the above described surface modified pigment, commercially available self-dispersed pigments, such as CAB-O-JET®-200, CAB-O-JET®-300, CAB-O-JET®-400, IJX-™157, IJX-™253, IJX-™266, IJX-™273, IJX-™444, IJX-™55, CAB-O-JET®-250C, CAB-O-JET®-260M, CAB-O-JET®-270, CAB-O-JET®-450C, CAB-O-JET®-465M, CAB-O-JET®-470Y, and CAB-O-JET®-480V available from Cabot Corporation.

[0063] Some examples of the self-dispersed pigment have a sulfonic acid, sulfonate, carboxylic acid, or carboxylate as a functional group on the surface thereof. An example of the pigment at least having carboxylic acid or carboxylate as a functional group on the surface thereof is a pigment coated with a resin. This type of pigment may be referred to as a microcapsule pigment. Commercially available microcapsule pigments are available from DIC Corporation, or TOYO Ink Co., Ltd. The self-dispersed pigment may also have a polymer compound physically adsorbed or chemically bonded to the pigment.

[0064] The pigment can be dispersed with a separate dispersant. Examples of the pigment dispersant that may be used may include a polymer dispersant, an anionic surfactant, a cationic surfactant, an amphoteric surfactant, and a nonionic surfactant.

[0065] As the polymer dispersant, a polymer having a hydrophilic structure and a hydrophobic structure may be used. As the polymer having the hydrophilic structure

and the hydrophobic structure, a condensation polymer or an addition polymer may be used. Examples of the condensation polymer may include a polyester based dispersant. Examples of the addition polymer may include an addition polymer of monomers having an ethylenically unsaturated group. By copolymerizing a monomer having an ethylenically unsaturated group having a hydrophilic group and a monomer having an ethylenically unsaturated group having a hydrophobic group, a suitable polymer dispersant may be obtained. Further, a homopolymer of monomers having an ethylenically unsaturated group having a hydrophilic group may be used. Examples of the monomer having an ethylenically unsaturated group having a hydrophilic group may include monomers having a carboxyl group, a sulfonate group, a hydroxyl group, a phosphate group, or the like. Some specific examples include acrylic acid, methacrylic acid, crotonic acid, itaconic acid, itaconic acid monoester, maleic acid, maleic acid monoester, fumaric acid, fumaric acid monoester, vinyl sulfonic acid, styrene sulfonic acid, sulfonated vinyl naphthalene, vinyl alcohol, acrylamide, methacryloxy ethyl phosphate, bismethacryloxy ethyl phosphate, methacryloxy ethyl phenyl acid phosphate, ethylene glycol dimethacrylate, and diethylene glycol dimethacrylate.

[0066] Examples of suitable dispersants/surfactants include alkyl polyethylene oxides, alkyl phenyl polyethylene oxides, polyethylene oxide block copolymers, acetylenic polyethylene oxides, polyethylene oxide (di)esters, protonated polyethylene oxide amines, protonated polyethylene oxide amides, dimethicone copolyols, substituted amine oxides, and the like. Suitable surfactants can include nonionic secondary alcohol ethoxylates, such as TERGITOL™ 15-S-12 and TERGITOL™ 15-S-7 (available from Dow Chemical Company); nonionic, octylphenol ethoxylate surfactants, such as TRITON™ X-100 or TRITON™ X-405 (available from Dow Chemical Company); and sodium dodecylsulfate.

[0067] Some examples of the anionic surfactant may include alkylbenzene sulfonate, alkylphenyl sulfonate, alkylnaphthalene sulfonate, a higher fatty acid salt, a sulfate ester salt of higher fatty acid ester, a sulfonate of higher fatty acid ester, a sulfate ester salt and sulfonate of higher alcohol ether, higher alkyl sulfosuccinate, polyoxyethylene alkylether carboxylate, polyoxyethylene alkylether sulfate, alkyl phosphate, and

polyoxyethylene alkyl ether phosphate. Some specific examples of the anionic surfactant include dodecylbenzenesulfonate, isopropylnaphthalenesulfonate, monobutylphenylphenol monosulfonate, monobutylbiphenyl sulfonate, and dibutylphenylphenol disulfonate.

[0068] Some examples of the nonionic surfactant may include polyoxyethylene alkyl ether, polyoxyethylene alkyl phenyl ether, polyoxyethylene fatty acid ester, sorbitan fatty acid ester, polyoxyethylene sorbitan fatty acid ester, polyoxyethylene sorbitol fatty acid ester, glycerin fatty acid ester, polyoxyethylene glycerin fatty acid ester, polyglycerin fatty acid ester, sucrose fatty acid ester, polyoxyethylene alkylamine, polyoxyethylene fatty acid amide, alkyl alkanolamide, fatty acid alkyloamide, polyethylene glycol polypropylene glycol block copolymer, acetylene glycol, and a polyoxyethylene adduct of acetylene glycol. Some specific examples of the nonionic surfactant include polyoxyethylenenonyl phenylether, polyoxyethyleneoctyl phenylether, and polyoxyethylenedodecyl phenylether. Further examples of the nonionic surfactant may include silicon surfactants, such as a polysiloxane oxyethylene adduct; fluorine surfactants, such as perfluoroalkylcarboxylate, perfluoroalkyl sulfonate, and oxyethyleneperfluoro alkylether; and biosurfactants, such as spiculisporic acid, rhamnolipid, and lysolecithin.

[0069] The polymer dispersant or the nonionic, cationic, anionic and/or amphoteric surfactants can be present in an amount ranging from about 0.01 wt% to 10 wt% based on a total wt% of the photo curable ink composition.

[0070] Still other suitable colorants include wax resin powders or emulsions colored by a dye, a fluorescent dye, or a fluorescent pigment.

[0071] The balance of the photo curable ink composition is water (e.g., purified water, deionized water, etc.). As such, the wt% of the water depends on the other components in the ink composition.

[0072] Some examples of the photo curable ink composition disclosed herein include a co-solvent in addition to water. Classes of co-solvents that may be used can include organic co-solvents, including alcohols (e.g., aliphatic alcohols, aromatic alcohols, polyhydric alcohols (e.g., diols), polyhydric alcohol derivatives, long chain alcohols,

etc.), glycol ethers, polyglycol ethers, a nitrogen-containing solvent (e.g., pyrrolidinones, caprolactams, formamides, acetamides, etc.), and a sulfur-containing solvent. Examples of such compounds include primary aliphatic alcohols, secondary aliphatic alcohols, 1,2-alcohols, 1,3-alcohols, 1,5-alcohols, ethylene glycol alkyl ethers, propylene glycol alkyl ethers, higher homologs (C6-C12) of polyethylene glycol alkyl ethers, N-alkyl caprolactams, unsubstituted caprolactams, both substituted and unsubstituted formamides, both substituted and unsubstituted acetamides, and the like. Still other examples of suitable co-solvents include propylene carbonate and ethylene carbonate.

[0073] Some examples of the polyhydric alcohols may include sugar alcohols such as ethylene glycol, diethylene glycol, propylene glycol, butylene glycol, triethylene glycol, tetraethylene glycol, 2-methyl-1,3-propanediol, 1,5-pentanediol, 1,2-hexanediol, 1,5-hexanediol,1,6-hexanediol, 1,2,6-hexanetriol, glycerin, trimethylolpropane, and xylitol; and saccharides such as xylose, glucose, and galactose. Some examples of the polyhydric alcohol derivatives may include ethylene glycol monomethyl ether, ethylene glycol mono ethyl ether, ethylene glycol monobutyl ether, diethylene glycol monomethyl ether, diethylene glycol monoethyl ether, diethylene glycol monobutyl ether, propylene glycol monobutyl ether, dipropylene glycol monobutyl ether, and ethylene oxide adduct of diglycerin. Some examples of the nitrogen-containing solvent may include 2-pyrrolidinone, N-methyl-2-pyrrolidone, 1-(2-hydroxyethyl)-2-pyrrolidone, cyclohexylpyrrolidone, and triethanolamine. Examples of the alcohols may include ethanol, isopropyl alcohol, butyl alcohol, and benzyl alcohol. Examples of the sulfur-containing solvent may include thiodiethanol, thiodiglycerol, sulfolane, and dimethyl sulfoxide.

[0074] A single co-solvent may be used, or several co-solvents may be used in combination. When included, the co-solvent(s) is/are present in total in an amount ranging from 0.1 wt% to 60 wt%, depending on the jetting architecture, though amounts outside of this range can also be used. As other example, the co-solvent(s) may range from about 1 wt% to about 30 wt% or about 40 wt% of the total wt% of the photo curable ink composition.

[0075] The photo curable ink composition may also include various other additives to enhance the properties of the ink composition for specific applications. Examples of these additives include those added to inhibit the growth of microorganisms, viscosity modifiers, materials for pH adjustment, sequestering agents, anti-kogation agents, preservatives, and the like.

[0076] The additives added to inhibit the growth of microorganisms may be biocides, fungicides, and other microbial agents. Examples of suitable microbial agents include, but are not limited to, NUOSEPT® (Nudex, Inc.), UCARCIDE™ (Union carbide Corp.), VANCIDE® (R.T. Vanderbilt Co.), PROXEL® (ICI America), and combinations thereof.

[0077] Sequestering agents, such as EDTA (ethylene diamine tetra acetic acid), may be included to eliminate the deleterious effects of heavy metal impurities, and buffer solutions may be used to control the pH of the ink. From 0 wt% to about 2 wt% (of the total wt% of the ink composition) of the sequestering agent and/or the buffer solution, for example, can be used. Viscosity modifiers may also be present, as well as other additives to modify properties of the ink as desired. Such additives can be present in an amount ranging from 0 wt% to about 20 wt% based on the total wt% of the ink composition.

[0078] Both the polymeric sensitizer and the photoinitiator disclosed herein can be stable in basic aqueous environments at pH from greater than 7 to 14 or higher. Thus, the photo curable ink composition can be formulated to have a pH from greater than 7 to 14 or higher. In some examples, the photo curable ink can have a pH of 8 or higher. In one specific example, the photo curable ink can have a pH of 8.5. As used herein, the term "stable" refers to the ability of the polymeric sensitizer and the photoinitiator to have a shelf life of at least 1 year. As examples, the photo curable ink compositions disclosed herein can have a shelf life of greater than 1 year, greater than 2 years, or longer.

[0079] As mentioned herein, both the polymeric sensitizer and the photoinitiator can exhibit less migration in the cured ink compared with other sensitizers or photoinitiators, such as small molecule synergists. The photo-reactive binder in the ink composition can include polymers or monomers that polymerize or cross-link during the curing

process. As the binder cures, the polymeric sensitizer can become locked into the cured binder due, in part, to the polyether chain of the polymeric sensitizer. The photoinitiator may become fully polymerized to form a polymer network with the cured binder. Therefore, there is little or no migration of the polymeric sensitizer and the photoinitiator in the cured ink composition.

[0080] The present disclosure also extends to a method of making the photo curable ink composition. In an example, a method can include mixing the reactive binder, the polymeric sensitizer, the photoinitiator, the colorant, and water (alone or in combination with co-solvent(s)). In one example, the method can also include adjusting the pH of the ink composition to be from greater than 7 to 14. In another example, the method can include adjusting the pH of the ink to be 8 or higher.

[0081] The photo curable ink composition can be printed on a broad selection of substrates, including untreated plastics, flexible as well as rigid, porous or non-porous substrates. Some examples include paper (e.g., plain paper, coated, glossy paper, etc.), cardboard, foam board, textile, and others. The ink composition exhibits good adhesion on a variety of substrates. The photo curable ink composition also has viscosity suitable for inkjet printing, thus enabling good printing performance. In some examples, the ink composition can be formulated for thermal inkjet printing. The photo-curable ink composition of the present disclosure enables high printing speed and is very well suited for use in digital inkjet printing.

[0082] The photo curable ink composition can be UV curable, and in one specific example, may be UV LED curable. As used herein, “UV curable” refers to compositions that can be cured by exposure to ultraviolet light from any UV source such as a mercury vapor lamp, UV LED source, or the like. Mercury vapor lamps emit high intensity light at wavelengths from 240 nm to 270 nm and 350 nm to 380 nm. “LED curable” refers to compositions that can be cured by ultraviolet light from an ultraviolet LED. Ultraviolet LEDs typically emit light at specific wavelengths. For example, ultraviolet LEDs are available at 365 nm and 395 nm wavelengths, among others. The term "photo curable" refers generally to compositions that can be cured by exposure to light from any

wavelength suitable for the composition being cured. Typically, the photo curable composition will be UV curable, and in some cases UV LED curable.

[0083] To further illustrate the present disclosure, examples are given herein. It is to be understood that these examples are provided for illustrative purposes and are not to be construed as limiting the scope of the present disclosure.

EXAMPLES

[0084] ***Example 1***

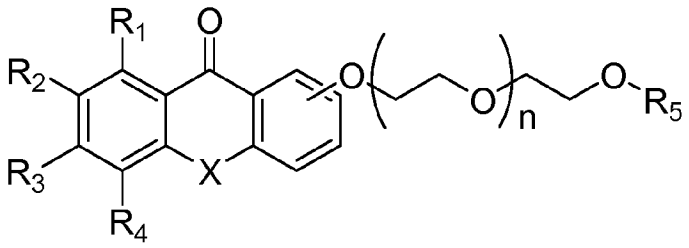
[0085] A sodium TPO salt (TPO-Na) was made. 128.8 grams (0.42 mol) of ethyl trimethylbenzoylphenylphosphinate were initially introduced into 600 ml of ethyl methyl knetone (MEK). Then, 1.1 equivalents of 69 grams (0.46 mol) of sodium iodide were added to the solution. After 15 minutes, the homogenous solution was heated to 65°C and stirred for 24 hours. A white solid formed in the solution. After cooling down to room temperature, the white solid was collected by vacuum filtration, and was washed with petroleum ether (500 ml, three times each) by stirring inside a beaker. The white solid was further dried in oven. The yield was 112.7 g (90%) of the TPO-Na.

[0086] The TPO-Na was dissolved in a solution of 10% 1-(2-hydroxyethyl)-2-pyrrolidone (2HE2P) and water. The absorbance of the solution was taken immediately after formation, after 2 weeks in an accelerated storage environment, and after 4 weeks in the accelerated storage environment. The absorbance after exposure to the accelerated storage environment is indicative of the accelerated storage (or shelf) life (ASL) of the solution. The absorbance was measured with a UV-Vis spectrophotometer. The accelerated storage environment may be an environment that has a temperature ranging from about 45°C to about 60°C. In this example, the accelerated storage environment is an oven baked at a temperature of about 50°C, and the TPO-Na solution was stored in the accelerated storage environment for the selected time periods. The ASL results are shown in Fig. 1. Compared to the initial absorption (labeled TPO-Na/10%2HE2P), TPO-Na does not show any degradation after 2 weeks or 4 weeks of accelerated storage, which means TPO-Na is stable at this condition.

[0087] As a comparative example, IRGACURE® 819 (BASF Corp.) was dissolved in a solution of 10% 1-(2-hydroxyethyl)-2-pyrrolidone (2HE2P) and 90% ethanol. The solvent mixture was selected because IRGACURE® 819 is not water soluble. The absorbance of the solution was taken immediately after formation and after 2 weeks in the same accelerated storage environment as the TPO-Na solution. In the presence of the solvent mixture, the IRGACURE® 819 likely goes through solvolysis, losing its reactivity after a few months (evidenced by the accelerated storage results). The results are shown in Fig. 2. Comparing the results for the TPO-Na solution with the results for the IRGACURE® 819 solution, IRGACURE® 819 showed almost 50% loss of absorption after 2 week of accelerated storage. These results demonstrate significant stability improvement of TPO-Na over IRGACURE® 819.

[0088] ***Example 2***

[0089] A water soluble polymeric sensitizer having formula (II):



was prepared, where the functionalized anthrone moiety was thioxanthrenone, n was about 13, and R_5 was a methyl group. This is referred to as TX-PEG-600.

[0090] 0.5 wt% of the TPO-Na photoinitiator of Example 1 was dissolved in water. 0.25 wt% of the water soluble polymeric sensitizer was dissolved in water. The UV-Visible absorption of the TPO-Na salt (labeled TPO-Nax100) and the water soluble polymeric sensitizer (labeled TXPEG600x100) was measured. The absorbance results (multiplied by 100) are shown in Fig. 3 along the left Y axis, along with the LED output along the right Y axis.

[0091] As shown in Fig. 3, the TPO-Na has an absorption λmax at 372 nm, its tail extends to 410 nm, and has pretty good overlap with the emission spectrum of the 395

nm LED. The molar extinct coefficient ε at 395 nm is 114, which is slightly lower than that of water insoluble analogs TPO-L (an ester starting material that can be used to make the TPO salts) and IRGACURE® 819 measured in ethanol (neither of which is shown). The TX-PEG-600 (λmax= 398 nm, ε=6810) has a slight redshift in its absorption spectrum compared with isopropylthioxanthone (ITX, not shown, but which has a perfect overlap with LED emission spectrum). The results in Fig. 3 illustrate that the TPO-Na salt and the water soluble polymeric sensitizer have high reactivity at 395 nm LED lights.

[0092] ***Example 3***

[0093] A photo-reactive binder (referred to as PUD-620) of the inks was synthesized as follows:

[0094] (Part 1) 103.4g of bisphenol A glycerolate diacrylate (BGDA), 1.03g of 4-methoxyphenyl (MEHQ), 142.3g of isophorone diisocyanate (IPDI), and 164g of acetone were mixed in a 500 ml 4-neck round bottom flask. A mechanical stirrer (with glass rod and a TEFLON® blade) and a condenser were attached. The flask was immersed in a constant temperature bath at 60ºC. The reactor system was maintained under dry oxygen blanket. 12 drops of dibutyl tin dilaurate (DBTDL) were added to initiate the polymerization. Polymerization was continued for 2 hours at 60ºC until the %NCO reached the theoretical value. A 0.5g sample was withdrawn for %NCO titration to confirm reaction.

[0095] (Part 2) 114.26g of 3-(acryloyloxy)-2-hydroxypropyl methacrylate (AHPMA), 1.14g of MEHQ, and 66g of acetone were mixed in a beaker and added to the reactor system over 30 seconds. The polymerization was continued for 4 hours at 60ºC. 0.5g of prepolymer was withdrawn for final %NCO titration. The water bath temperature was reduced to 30ºC.

[0096] (Part 3) 40.05g taurine, 25.6g of 50% NaOH, and 200.3g of deionized water were mixed in a beaker until the taurine completely dissolved. This solution was added to the reactor system at 30ºC with vigorous stirring over 1-3 minutes. The water bath

temperature was raised to 40°C to complete the reaction. The mixture became clear and viscous after 10-15 minutes.

[0097] (Part 4) The viscous, prepolymer mixture was added to 1026.9g of deionized over 5-10 minutes with enough agitation to form a polyurethane dispersion (PUD). The PUD was filtered through 400 mesh stainless sieve. Acetone was removed with a Rotovap at 55°C.

[0098] The average particle radius of the polyurethane in PUD-620 was measured by Malvern Zetasizer and was 14nm (radius). The pH was 7.2. The % Solid was 32.3%.

[0099] ***Example 4***

[0100] A set of cyan inks were prepared to illustrate the effect of the photo initiating system disclosed herein.

[0101] Table 1A lists six cyan formulations prepared with three different UV curable polyurethane dispersions. PUD-520 is an acrylated polyurethane dispersion synthesized using a similar procedure as described for PUD 620 in Example 3. For PUD-520, however, hexamethylene diisocyanate was used instead of isophorone diisocyanate during Part 1 of the PUD synthesis. IRR 782 is an experimental UV curable polyurethane dispersion developed for inkjet applications. UCECOAT® 7710 is a commercial product of the same family as IRR 782, and it is designed for wood coating applications. Both IRR 782 and UCECOAT® 7710 were obtained from Allnex.

[0102] As shown in Table 1A, comparative samples 4-4A, 4-5A, and 4-6A were formulated with dispersed IRGACURE® 819 and TX-PEG-1000. Also as shown in Table 1A, example samples 4-1, 4-2, and 4-3 were formulated with an example of the photo initiator system disclosed herein, i.e., TPO-Na (from Example 1) and TX-PEG-1000. TX-PEG-1000 is similar to TX-PEG-600 (from Example 2) except the polyethylene glycol 600 (n~13) is replaced with polyethylene glycol 1000 (n~22). The loading of TX-PEG-1000 and TPO-Na was the same across samples 1-3.

[0103] Table 1B list the formulation of six additional comparative examples (labeled comparative examples 4-1B, 4-2B, 4-3B, 4-4B, 4-5B, and 4-6B, respectively). The

formulation for these examples was the same as listed in Table 1A, except TX-PEG-1000 was removed from all of the ink formulations.

TABLE 1A

Component	Example 4-1	Example 4-2	Example 4-3	Comp. Example 4-4A	Comp. Example 4-5A	Comp. Example 4-6A
PUD 520	15.0	0	0	15.0	0	0
IRR 782	0	15.0	0	0	15.0	0
UCECOAT® 7710	0	0	15.0	0	0	15.0
IRGACURE® 819	0	0	0	0.3	0.3	0.3
TPO-Na	1.5	1.5	1.5	0	0	0
TX-PEG-1000	0.50	0.50	0.50	0.50	0.50	0.50
DYNAX DX 4000 (fluorosurfactant)	0.15	0.15	0.15	0.15	0.15	0.15
Cyan Dispersion from TOYO pigment	2.50	2.50	2.50	2.50	2.50	2.50
Water	balance to 100 gram					

TABLE 1B

Component	Comp. Example 4-1B	Comp. Example 4-2B	Comp. Example 4-3B	Comp. Example 4-4B	Comp. Example 4-5B	Comp. Example 4-6B
PUD 520	15.0	0	0	15.0	0	0
IRR 782	0	15.0	0	0	15.0	0
UCECOAT® 7710	0	0	15.0	0	0	15.0
IRGACURE®819	0	0	0	0.3	0.3	0.3
TPO-Na	1.5	1.5	1.5	0	0	0
TX-PEG-1000	0	0	0	0	0	0
DYNAX DX 4000 (fluorosurfactant)	0.15	0.15	0.15	0.15	0.15	0.15
Cyan Dispersion from TOYO pigment	2.50	2.50	2.50	2.50	2.50	2.50
Water	balance to 100 gram					

[0104] The inks were made based on the following procedure.

[0105] (Part 1) Making PUD and PI (photoinitiator) mix. Take the certain amount of PUD required by Table 1A, and adjust the pH to pH=7.5 or above. The required amount

(according to Table 1A) of IRGACURE® 819 or TPO-Na, sensitizer (i.e., TX-PEG-1000), and fluorosurfactant DYNAX DX-4000 were added, and the mixtures were mixed thoroughly. In the cases of the formulations containing IRGACURE® 819, the mixture was heated to 50°C for 30 minutes in a water bath until all the IRGACURE® 819 was dissolved into the PUD. A light greenish yellow color developed once fully dissolved. In the cases of the comparative samples shown in Table 1B, no TX-PEG-1000 was added.

[0106] (Part 2) The required amount of pigment dispersion (cyan dispersion from TOYO pigment dispersed with an internal ink formulation), as shown in Tables 1A and 1B was added to another beaker, and under constant agitation, the PUD/PI/Vehicle mixture was added to the pigment dispersion. The inks were titrated to pH=8.5 and diluted to the required volume.

[0107] To speed up the printing process, the ink was coated on coated offset paper (Sterling Ultra Gloss (SUG)) with #5 wire bar to obtain 10 gsm wet laydown. This is the same amount of ink that is printed with a 6ng pen and 3 drops per pixel at $1/300^{th}$ of an inch pixel size. The ink was dried using a hot gun for 2 minutes before going to the curing process.

[0108] Some of the dried samples and comparative samples were cured on a conveyor at 100 feet/minute, using 16 watts/cm^2 LED lamp, with maximum emission at 395 nm wavelength. For the uncured samples and comparative samples, the inks were also coated and dried in the same way as the cured sample, except the last curing step was omitted.

[0109] The curing effect of the samples and comparative samples were evaluated using a Taber Linear Abrasion wet rub tester (model 5750). The tip of the rod was wrapped with a piece of white cloth, and 150 microliters of water was applied on the cloth before the test. The tip was rubbed on the ink film samples and comparative samples for 5 rub cycles at 42 cycles per minute.

[0110] The damage to the ink film samples and comparative samples were ranked in the following two ways: (1) visual grade, if the ink is totally removed, the wet rub resistance is ranked as 5, and if no ink is removed at all, the wet rub resistance is ranked as zero (0). In this ranking test, the smaller the value the better. (2) The optical

density of the image was measured before and after the wet rub test. The optical density difference, called Delta OD, was used to measure the curing effect. The higher the delta OD, the poorer the wet rub test and the curing effect.

[0111] The test results are listed in Table 2A and Table 2B.

[0112] With comparative examples 4-1B to 4-6B (Table 2B and Fig. 5), where there was no water soluble sensitizer in the formulations, the formulations with IRGACURE® 819 (i.e., comparative examples 4-4B, 4-5B, 4-6B) showed some curing effect on PUD 520 and IRR 782, but not much on UCECOAT® 7710, while the formulations with TPO-Na salt (i.e., comparative examples 4-1B, 4-2B, 4-3B) showed no curing effect in wet rub resistance on all the three PUDs.

[0113] However, as shown in Table 2A and Fig. 4, in the presence of the water soluble sensitizer, all the cured comparative samples (4-4A, 4-5A, 4-6A) and example samples (4-1, 4-2, 4-3) showed excellent wet rub resistance. From these results, it is clear that the combination of TPO-Na and TX-PEG-1000 (samples 4-1, 4-2, 4-3) generate a curing effect as good as IRGACURE® 819 with sensitizer (comparative examples 4-4A, 4-5A, 4-6A), while it eliminated the solubility and stability issue brought in by IRGACURE® 819.

TABLE 2A

Test result	Example 4-1	Example 4-2	Example 4-3	Comp. Example 4-4A	Comp. Example 4-5A	Comp. Example 4-6A
visual grade, uncured	5.00	5.00	5.00	4.00	5.00	5.00
visual grade, cured	0.00	2.00	1.00	0.00	2.00	3.0
Delta OD, uncured	1.49	1.81	0.93	1.46	1.63	0.96
Delta OD, cured	-0.01	0.32	0.0	0.13	0.33	0.07

TABLE 2B

Test result	Comp. Example 4-1B	Comp. Example 4-2B	Comp. Example 4-3B	Comp. Example 4-4B	Comp. Example 4-5B	Comp. Example 4-6B
visual grade, uncured	4.50	5.00	5.00	3.50	4.50	5.00
visual grade, cured	4.00	5.00	5.00	2.00	2.00	4.50
Delta OD, uncured	1.39	1.81	1.20	1.28	1.58	1.35
Delta OD, cured	1.44	1.86	1.01	0.41	0.5	1.17

[0114] ***Example 5***

[0115] A black ink, a magenta ink, and a cyan ink were prepared in accordance with the examples disclosed herein. In particular, the TPO-Na of Example 1 and the water soluble polymeric sensitizer of Example 2 were incorporated into the black ink and the cyan ink. The formulations of the inks are shown in Table 3.

TABLE 3

Ingredient	Specific component	Black Ink (wt%)	Magenta Ink (wt%)	Cyan Ink (wt%)
Photo-reactive binder	PUD-620 from Example 3	10	10	10
Photoinitiator	TPO-Na	0.5	0.5	0.5
Polymeric sensitizer	TX-PEG-600	0.25	0.25	0.25
Co-solvent	2-hydroxyethylpyrrolidone	10	10	10
Colorant	Black pigment dispersion	2.75	0	0
	Magenta pigment dispersion	0	3	0
	Cyan pigment dispersion	0	0	2.5
Water		76.5	76.25	76.75

[0116] The black and magenta inks were printed with a testbed high speed printer on an untreated, coated offset paper (Sterling Ultra Gloss (SUG) media). For the cured

samples, the inks were printed, dried, and cured at a dose target of 160 mJ/cm^2. The printing speed (including drying and curing) was 100 fpm. For the uncured samples, the inks were also printed and dried, but not cured (i.e., the curing lamp was turned off during printing).

[0117] The durability of the black and magenta inks (uncured and cured) was evaluated with an immediate rub test and a wet rub test. For the immediate rub test, as soon as the curing or the drying (in the case of the uncured samples) was complete, a Digital Ink Rub tester (TMI, Inc.), using a 0.25 lb. weight was put onto the print and was rubbed for 5 rub cycles at 42 cycles per minute. The immediate rub test results are shown in black and white in Fig. 6. As illustrated, both the uncured black ink (K-UC) and the uncured magenta ink (M-UC) were almost completely rubbed off at the area that was exposed to the tester. In contrast, the cured black ink (K-C) and the cured magenta ink (M-C) exhibit little to no ink loss, and thus exhibited superior durability. These results illustrate that the inks disclosed herein, when cured, are able to withstand scratching and rubbing from the printing press itself, even at high printing speeds.

[0118] The wet rub test was performed as described in Example 4. The wet rub test results are shown in black and white in Fig. 7. As illustrated, both the uncured black ink (K-UC) and the uncured magenta ink (M-UC) were less durable than the cured black ink (K-C) and the cured magenta ink (M-C).

[0119] The cyan ink was printed with a testbed high speed printer on an untreated, coated offset paper (Sterling Ultra Gloss (SUG) media). For the cured sample, the cyan ink was printed, dried, and cured at a dose target of 160 mJ/cm^2. The printing speed (including drying and curing) was 100 fpm. For the uncured sample, the cyan ink was also printed and dried, but not cured (i.e., the curing lamp was turned off during printing).

[0120] The durability of the cyan ink (uncured and cured) was evaluated with the wet rub test. The wet rub test was performed as previously described. The optical density of the print was measured with a densitometer before and after the wet rub test. The change in optical density was calculated. The wet rub test results are shown in black

and white in Fig. 8, and the optical density measurements/calculations are shown in Table 4. The cured cyan ink exhibit improved durability over the uncured cyan ink.

TABLE 4

	Uncured Cyan Ink	Cured Cyan Ink
OD (print before wet rub)	1.17	1.14
OD (print after wet rub)	0.58	0.89
ΔOD	0.59	0.25

[0121] It is to be understood that the ranges provided herein include the stated range and any value or sub-range within the stated range. For example, a range from about 5 wt% to about 70 wt% should be interpreted to include not only the explicitly recited limits of about 5 wt% to about 70 wt%, but also to include individual values, such as 6.5 wt%, 10 wt%, 12.5 wt%, 55 wt%, etc., and sub-ranges, such as from about 12 wt% to about 60 wt%, from about 25 wt% to about 50 wt%, etc. Furthermore, when "about" is utilized to describe a value, this is meant to encompass minor variations (up to +/- 10%) from the stated value.

[0122] Reference throughout the specification to "one example", "another example", "an example", and so forth, means that a particular element (e.g., feature, structure, and/or characteristic) described in connection with the example is included in at least one example described herein, and may or may not be present in other examples. In addition, it is to be understood that the described elements for any example may be combined in any suitable manner in the various examples unless the context clearly dictates otherwise.

[0123] In describing and claiming the examples disclosed herein, the singular forms "a", "an", and "the" include plural referents unless the context clearly dictates otherwise.

[0124] While several examples have been described in detail, it is to be understood that the disclosed examples may be modified. Therefore, the foregoing description is to be considered non-limiting.

What is claimed is:

1. A photo curable ink composition, comprising:

a photo-reactive binder;

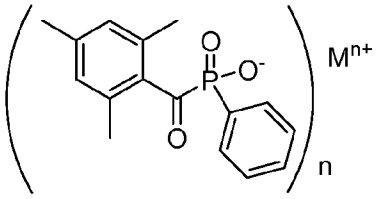
a water soluble polymeric sensitizer, including:

a functionalized anthrone moiety;

a polyether chain; and

an amide linkage or an ether linkage attaching one end of the polyether chain to the functionalized anthrone moiety;

a water soluble photoinitiator having a formula (I) of:



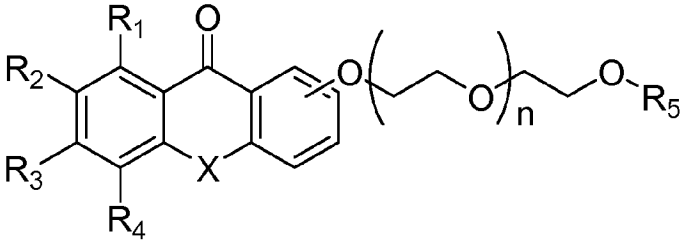
wherein n is any integer from 1 to 5 and M is a metal with a valence from 1 to 5;

a colorant; and

a balance of water.

2. The photo curable ink composition as defined in claim 1 wherein M is selected from the group consisting of Li, Na, K, Cs, Rb, Be, Mg, Ca, Ba, Al, Ge, Sn, Pb, As, and Sb.

3. The photo curable ink composition as defined in claim 1 wherein the water soluble polymeric sensitizer has a formula (II) of:



and wherein:

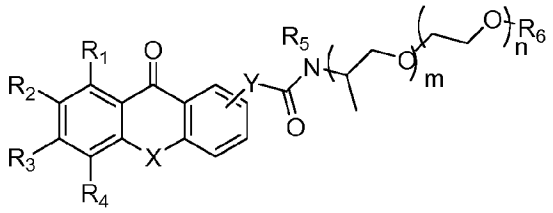
R_1, R_2, R_3, R_4, and R_5 are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a halogen atom, $-NO_2$, $-O-R_d$, $-CO-R_d$, $-CO-O-R_d$, $-O-CO-R_d$, $-CO-NR_dR_e$, $-NR_dR_e$, $-NR_d-CO-R_e$, $-NR_d-CO-O-R_e$, $-NR_d-CO-NR_eR_f$, $-SR_d$, $-SO-R_d$, $-SO_2-R_d$, $-SO_2-O-R_d$, $-SO_2NR_dR_e$ and a perfluoroalkyl group;

R_d, R_e, and R_f are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted aralkyl group;

X is O, S, or NH; and

n ranges from 1 to 200.

4. The photo curable ink composition as defined in claim 1 wherein the water soluble polymeric sensitizer has a formula (III) of:



and wherein:

R_1, R_2, R_3, R_4, R_5, and R_6 are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a halogen atom, $-NO_2$, $-O-R_d$, $-CO-R_d$, $-CO-O-R_d$, $-O-CO-R_d$, $-CO-NR_dR_e$, $-NR_dR_e$, $-NR_d-CO-R_e$, $-NR_d-CO-O-R_e$, $-NR_d-CO-NR_eR_f$, $-SR_d$, $-SO-R_d$, $-SO_2-R_d$, $-SO_2-O-R_d$, $-SO_2NR_dR_e$ and a perfluoroalkyl group;

R_d, R_e, and R_f are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or

unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted aralkyl group;

Y is a bond, $(CH_2)_q$, or $O(CH_2)_q$, wherein q is any integer from 1 to 100;

X is O, S, or NH;

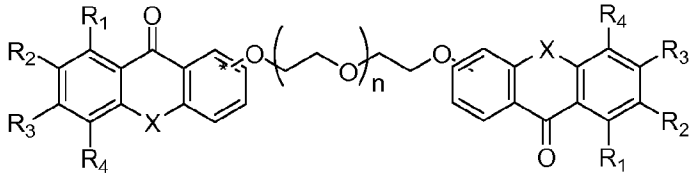
m ranges from 1 to 200; and

n ranges from 1 to 200.

5. The photo curable ink composition as defined in claim 1, further comprising an additional functionalized anthrone moiety attached to an opposed end of the polyether chain through an additional ether linkage or an additional amide linkage.

6. The photo curable ink composition as defined in claim 5 wherein:

the water soluble polymeric sensitizer has a formula (IV) of:



and wherein:

R_1, R_2, R_3, and R_4, are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a halogen atom, $-NO_2$, $-O-R_d$, $-CO-R_d$, $-CO-O-R_d$, $-O-CO-R_d$, $-CO-NR_dR_e$, $-NR_dR_e$, $-NR_d-CO-R_e$, $-NR_d-CO-O-R_e$, $-NR_d-CO-NR_eR_f$, $-SR_d$, $-SO-R_d$, $-SO_2-R_d$, $-SO_2-O-R_d$, $-SO_2NR_dR_e$ and a perfluoroalkyl group;

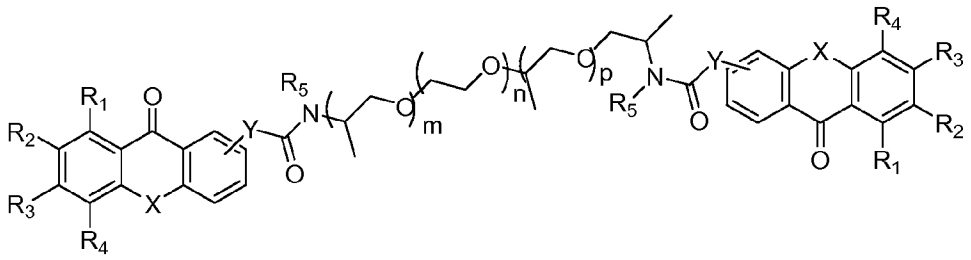
R_d, R_e, and R_f are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted aralkyl group;

X is O, S, or NH; and

n ranges from 1 to 200.

7. The photo curable ink composition as defined in claim 5 wherein:

the water soluble polymeric sensitizer has a formula (V) of:



and wherein:

R_1, R_2, R_3, R_4, and R_5 are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a halogen atom, $-NO_2$, $-O-R_d$, $-CO-R_d$, $-CO-O-R_d$, $-O-CO-R_d$, $-CO-NR_dR_e$, $-NR_dR_e$, $-NR_d-CO-R_e$, $-NR_d-CO-O-R_e$, $-NR_d-CO-NR_eR_f$, $-SR_d$, $-SO-R_d$, $-SO_2-R_d$, $-SO_2-O-R_d$, $-SO_2NR_dR_e$ and a perfluoroalkyl group;

R_d, R_e, and R_f are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted aralkyl group;

X is O, S, or NH;

Y is a bond, $(CH_2)_q$, or $O(CH_2)_q$, wherein q is any integer from 1 to 100;

m ranges from 1 to 200;

n ranges from 1 to 200; and

p ranges from 1 to 200.

8. The photo curable ink composition as defined in claim 1 wherein:

the polyether chain is a first polyether chain;

the water soluble polymeric sensitizer further comprises:

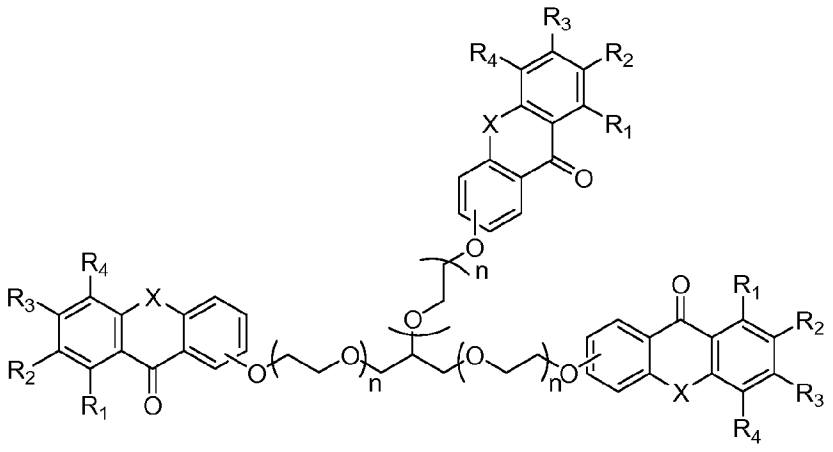
second and third polyether chains; and

second and third functionalized anthrone moieties;

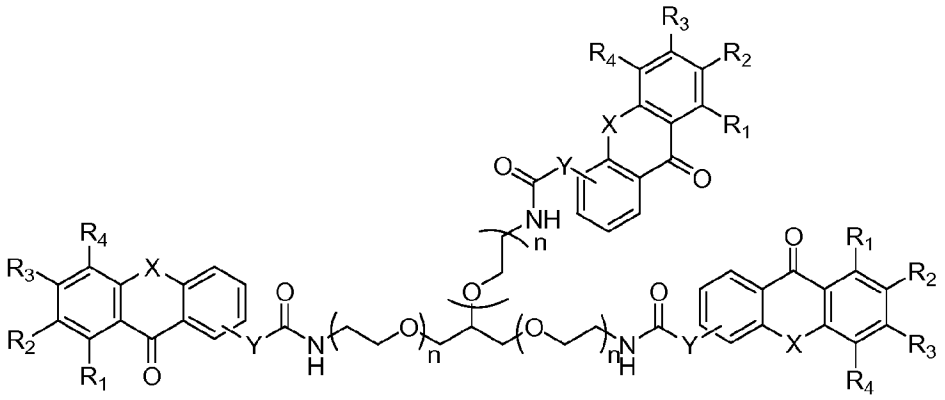
the second polyether chain is attached to an opposed end of the first polyether chain and the second functionalized anthrone moiety is attached to the second polyether chain through a second amide linkage or a second ether linkage; and

the third polyether chain is attached to the opposed end of the first polyether chain and the third functionalized anthrone moiety is attached to the third polyether chain through a third amide linkage or a third ether linkage.

9. The photo curable ink composition as defined in claim 8 wherein the water soluble polymeric sensitizer has a formula selected from the group consisting of:



(VI) and



(VII)

wherein for each of formula (VI) and (VII):

R_1, R_2, R_3, and R_4, are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a halogen atom, $-NO_2$, $-O-R_d$, $-CO-R_d$, $-CO-O-R_d$, $-O-CO-R_d$, $-CO-NR_dR_e$, $-NR_dR_e$, $-NR_d-CO-R_e$, $-NR_d-CO-O-R_e$, $-NR_d-CO-NR_eR_f$, $-SR_d$, $-SO-R_d$, $-SO_2-R_d$, $-SO_2-O-R_d$, $-SO_2NR_dR_e$ and a perfluoroalkyl group;

R_d, R_e, and R_f are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted aralkyl group;

X is O, S, or NH; and

n ranges from 1 to 200; and

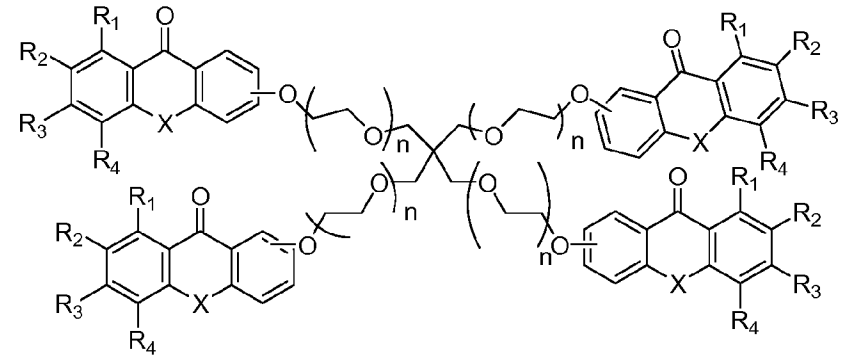
wherein for formula (VII) Y is a bond, $(CH_2)_q$, or $O(CH_2)_q$, wherein q is any integer from 1 to 100.

10. The photo curable ink composition as defined in claim 8, further comprising:

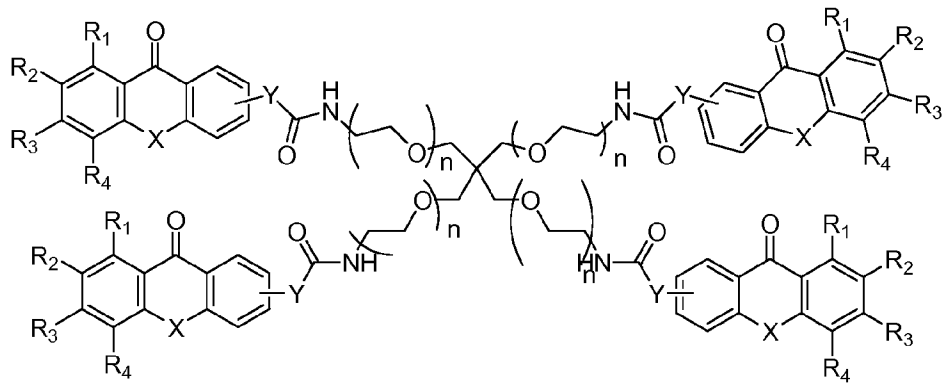
a fourth polyether chain attached to the opposed end of the first polyether chain; and

a fourth functionalized anthrone moiety attached to the fourth polyether chain through a fourth amide linkage or a fourth ether linkage.

11. The photo curable ink composition as defined in claim 10 wherein the water soluble polymeric sensitizer has a formula selected from the group consisting of:



(VIII) and



(IX)

wherein for each of formula (VIII) and (IX):

R_1, R_2, R_3, and R_4, are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a halogen atom, $-NO_2$, $-O-R_d$, $-CO-R_d$, $-CO-O-R_d$, $-O-CO-R_d$, $-CO-NR_dR_e$, $-NR_dR_e$, $-NR_d-CO-R_e$, $-NR_d-CO-O-R_e$, $-NR_d-CO-NR_eR_f$, $-SR_d$, $-SO-R_d$, $-SO_2-R_d$, $-SO_2-O-R_d$, $-SO_2NR_dR_e$ and a perfluoroalkyl group;

R_d, R_e, and R_f are each independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkene or alkenyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted aralkyl group;

X is O, S, or NH; and

n ranges from 1 to 200; and

wherein for formula (IX) Y is a bond, $(CH_2)_q$, or $O(CH_2)_q$, wherein q is any integer from 1 to 100.

12. The photo curable ink composition as defined in claim 1, further comprising a water soluble organic solvent.

13. The photo curable ink composition as defined in claim 1 wherein each of the water soluble polymeric sensitizer and the water soluble photoinitiator is stable in water at a pH ranging from greater than 7 to about 14.

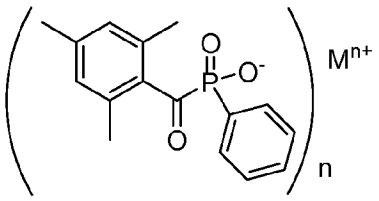
14. The photo curable ink composition as defined in claim 1 wherein:

the water soluble polymeric sensitizer is present in the photo curable ink composition in an amount ranging from about 0.1 wt% to about 10 wt% based on a total wt% of the photo curable ink composition; and

the water soluble photoinitiator is present in the photo curable ink composition in an amount ranging from about 0.1 wt% to about 10 wt% based on a total wt% of the photo curable ink composition.

15. A method of making a photo curable ink, comprising:

obtaining a water soluble photoinitiator having a formula (I) of:



wherein n is any integer from 1 to 5 and M is a metal with a valence from 1 to 5; and

mixing the water soluble photoinitiator with a photo-reactive binder, a colorant, a co-solvent, water, and a water soluble polymeric sensitizer, including:

a functionalized anthrone moiety;

a polyether chain; and

an amide linkage or an ether linkage attaching one end of the polyether chain to the functionalized anthrone moiety.

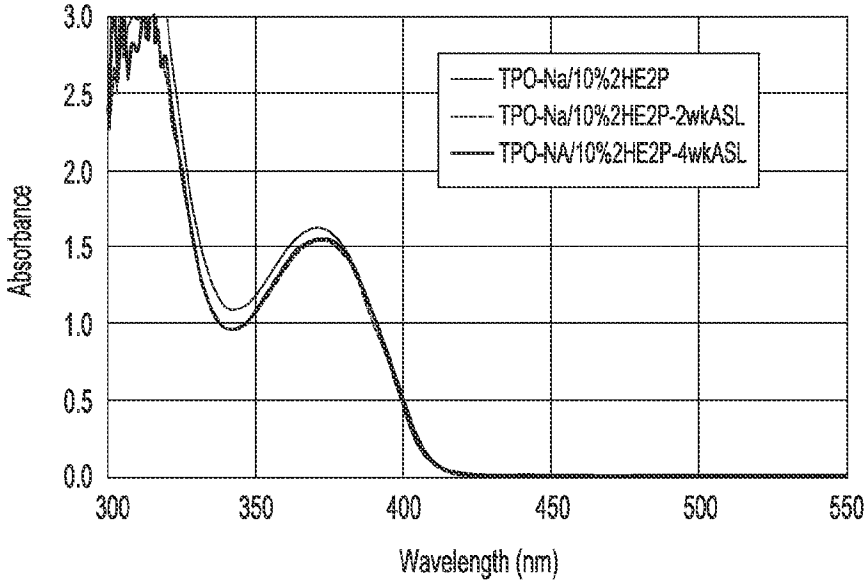

3.0
2.5
2.0
1.5
1.0
0.5
0.0
Absorbance
300
350
400
450
500
550
Wavelength (nm)
TPO-Na/10%2HE2P
TPO-Na/10%2HE2P-2wkASL
TPO-NA/10%2HE2P-4wkASL

Fig-1

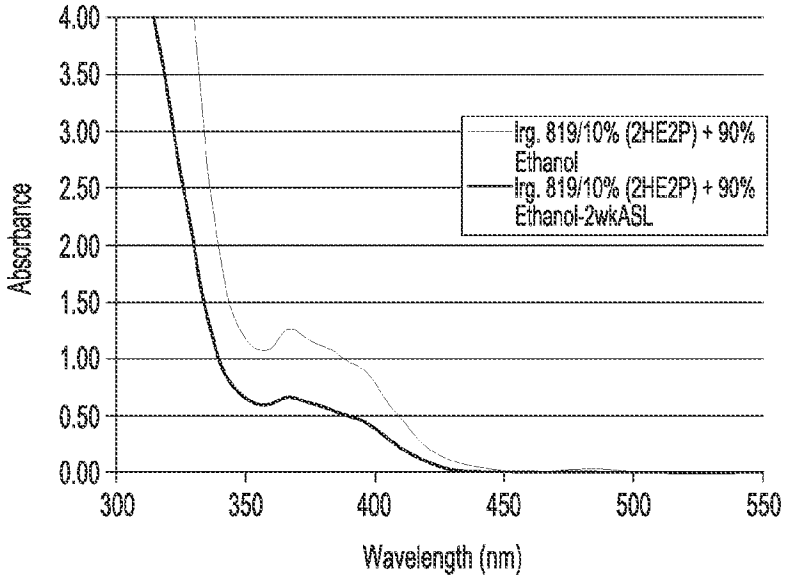

4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Absorbance
300
350
400
450
500
550
Wavelength (nm)
Irg. 819/10% (2HE2P) + 90% Ethanol
Irg. 819/10% (2HE2P) + 90% Ethanol-2wkASL

Fig-2

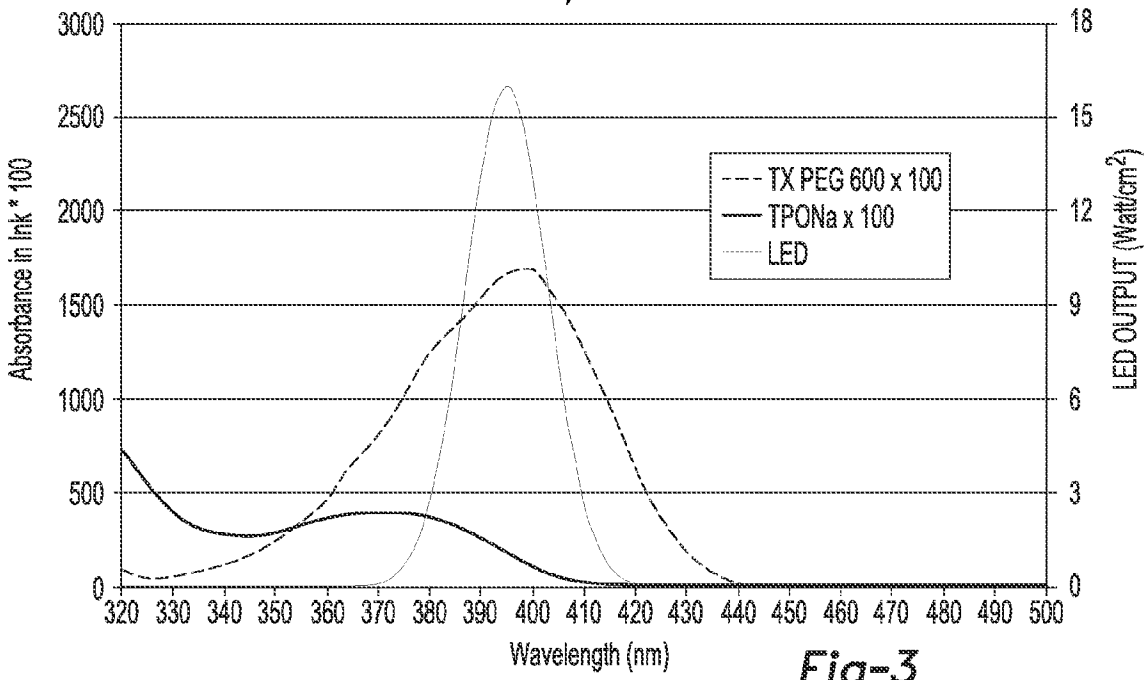


Fig-3

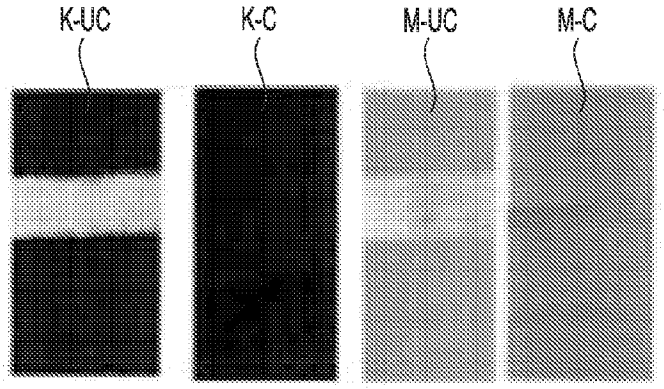


Fig-6

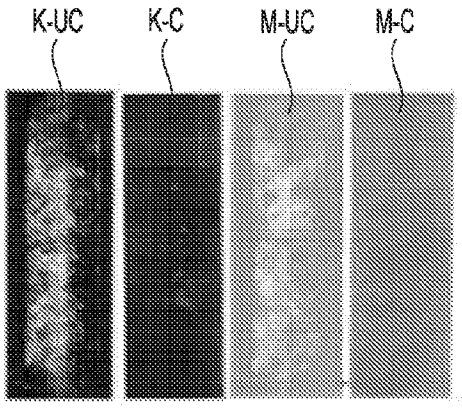


Fig-7

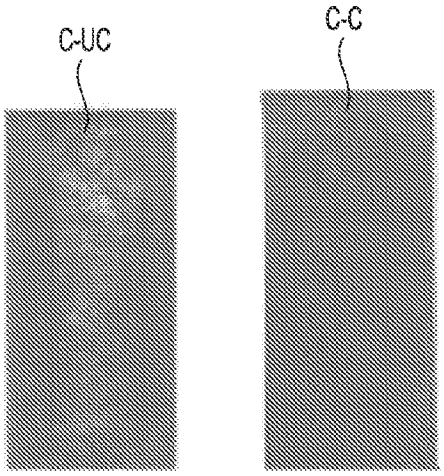


Fig-8

Fig-4

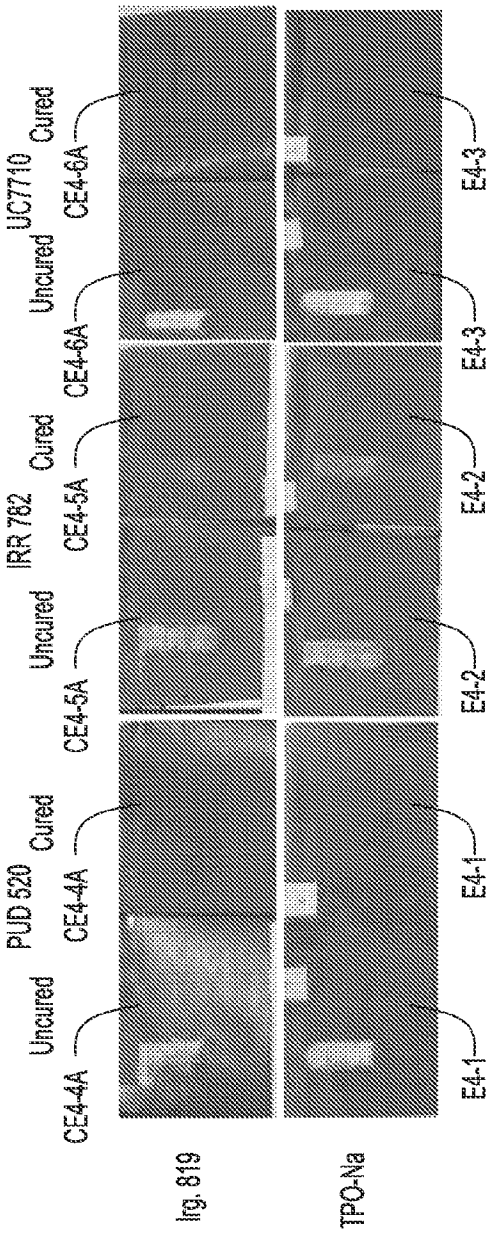
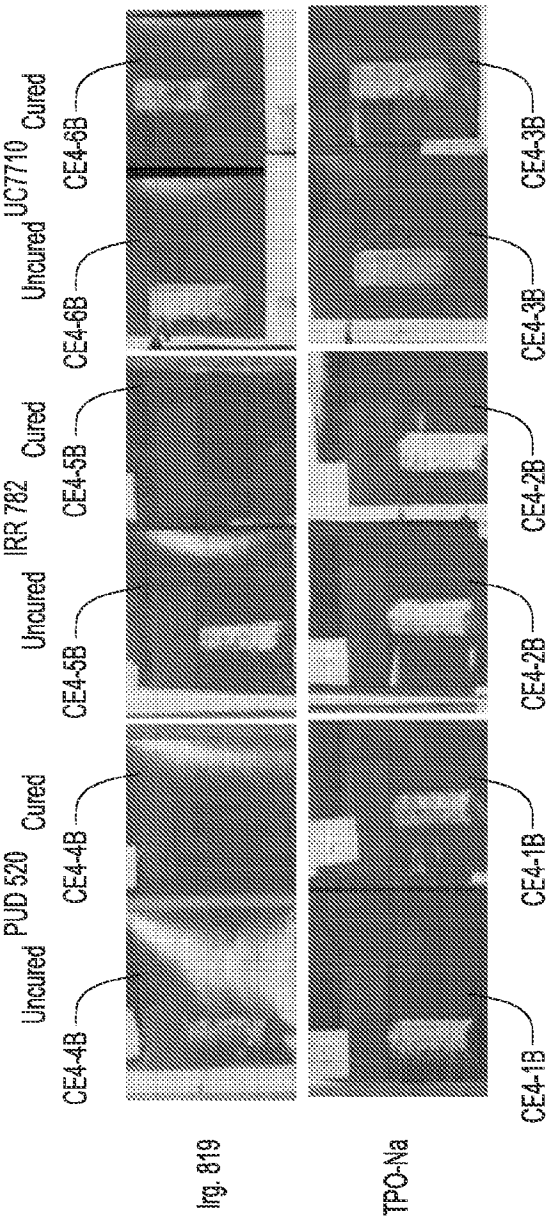

Irg. 819
TPO-Na
CE4-4A
Uncured
PUD 520
CE4-4A
Cured
CE4-5A
Uncured
IRR 782
CE4-5A
Cured
CE4-6A
Uncured
UC7710
CE4-6A
Cured
E4-1
E4-1
E4-2
E4-2
E4-3
E4-3

Fig-5


Irg. 819
TPO-Na
CE4-4B
Uncured
PUD 520
CE4-4B
Cured
CE4-5B
Uncured
IRR 782
CE4-5B
Cured
CE4-6B
Uncured
UC7710
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CE4-2B
CE4-2B
CE4-3B
CE4-3B

Electronic Acknowledgement Receipt

EFS ID:	43077721
Application Number:	17345981
International Application Number:	
Confirmation Number:	6659
Title of Invention:	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND
First Named Inventor/Applicant Name:	Christopher M. SEATON
Customer Number:	151692
Filer:	Robert L. Wolter./Cynthia Nugent
Filer Authorized By:	Robert L. Wolter.
Attorney Docket Number:	12914-003C2
Receipt Date:	24-JUN-2021
Filing Date:	11-JUN-2021
Time Stamp:	12:20:37
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	Information Disclosure Statement (IDS) Form (SB08)	12914003C2_IDS.pdf	1036346 eca8d1f75ded13cd28f100bac4a1f6f08f9a59bb	no	6

Warnings:

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Information:					
2	Foreign Reference	WO2017074394.pdf	4483839 4f83119183cc6275017fbf00e4d2e5cb43ada7d1	no	51
Warnings:					
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3	Non Patent Literature	Echod.pdf	319220 7da977ae173857d41dc26aa1d3708e8e34d2f311	no	3
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Information:					
		Total Files Size (in bytes):	15255666		

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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

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/345,981

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	320
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	700
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	800
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*			OR	x 100 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*				x 480 =	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	1820

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
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) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
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.

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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
17/345,981	06/11/2021	3636	1820	12914-003C2	20	2

CONFIRMATION NO. 6659

FILING RECEIPT

151692
Robert L. Wolter
Wolter Van Dyke Davis, PLLC
1900 Summit Tower Blvd.
SUITE 140
Orlando, FL 32810

OC000000126481817

Date Mailed: 06/24/2021

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.

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Inventor(s)

Christopher M. SEATON, Tampa, FL;
Timothy R. SEATON, Tampa, FL;

Applicant(s)

RUGGED CROSS HUNTING BLINDS LLC, Tampa, FL;

Power of Attorney: The patent practitioners associated with Customer Number 151692

Domestic Priority data as claimed by applicant

This application is a CON of 16/998,843 08/20/2020
which is a CON of 15/444,909 02/28/2017 PAT 10765108
which claims benefit of 62/301,007 02/29/2016

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: 06/22/2021

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/345,981**

Projected Publication Date: 09/30/2021

Non-Publication Request: No

Early Publication Request: No

Title

CAMOUFLAGE MATERIAL FOR A HUNTING BLIND

Preliminary Class

135

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

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Title 37, Code of Federal Regulations, 5.11 & 5.15

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Application Number	Not Yet Assigned
Filing Date	Herewith
First Named Inventor	Christopher M. SEATON
Title	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND
Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	12914-003C2

SIGNATURE of Applicant or Patent Practitioner

Signature	/Robert L. Wolter/	Date (Optional)	
Name	ROBERT L. WOLTER	Registration Number	36972
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

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

☐ *Total of _____ forms are submitted.

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

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

DBR Finance, Inc., Ex. 1006

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
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U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
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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: 151692

OR

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

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

☑ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

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

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

RUGGED CROSS HUNTING BLINDS LLC

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

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

Signature		Date (Optional)	6/11/21
Name	Christopher M. Seaton		
Title	CEO, Rugged Cross Hunting Blinds LLC		

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

☐ Total of forms are submitted.

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

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

Doc Code: TRACK1.REQ
Document Description: TrackOne Request

PTO/AIA/424 (04-14)

CERTIFICATION AND REQUEST FOR PRIORITIZED EXAMINATION UNDER 37 CFR 1.102(e) (Page 1 of 1)

First Named Inventor:	Christopher M. SEATON	Nonprovisional Application Number (if known):	
Title of Invention:	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND		

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS PRIORITIZED EXAMINATION FOR THE ABOVE-IDENTIFIED APPLICATION.

1. The processing fee set forth in 37 CFR 1.17(i)(1) and the prioritized examination fee set forth in 37 CFR 1.17(c) have been filed with the request. The publication fee requirement is met because that fee, set forth in 37 CFR 1.18(d), is currently $0. The basic filing fee, search fee, and examination fee are filed with the request or have been already been paid. I understand that any required excess claims fees or application size fee must be paid for the application.

2. I understand that the application may not contain, or be amended to contain, more than four independent claims, more than thirty total claims, or any multiple dependent claims, and that any request for an extension of time will cause an outstanding Track I request to be dismissed.

3. The applicable box is checked below:

I. ☑ Original Application (Track One) - Prioritized Examination under § 1.102(e)(1)

i. (a) The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a). This certification and request is being filed with the utility application via EFS-Web.

---OR---

(b) The application is an original nonprovisional plant application filed under 35 U.S.C. 111(a). This certification and request is being filed with the plant application in paper.

ii. An executed inventor's oath or declaration under 37 CFR 1.63 or 37 CFR 1.64 for each inventor, **or** the application data sheet meeting the conditions specified in 37 CFR 1.53(f)(3)(i) is filed with the application.

II. ☐ Request for Continued Examination - Prioritized Examination under § 1.102(e)(2)

i. A request for continued examination has been filed with, or prior to, this form.
ii. If the application is a utility application, this certification and request is being filed via EFS-Web.
iii. The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a), or is a national stage entry under 35 U.S.C. 371.
iv. This certification and request is being filed prior to the mailing of a first Office action responsive to the request for continued examination.
v. No prior request for continued examination has been granted prioritized examination status under 37 CFR 1.102(e)(2).

Signature /Robert L. Wolter/	Date 2020-06-11
Name (Print/Typed) Robert L. Wolter	Practitioner Registration Number 36972

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

☐ *Total of _____ forms are submitted.

DBR Finance, Inc., Ex. 1006

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.

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.	12914-003C2
First Named Inventor	Christopher M. SEATON
Title	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND
Priority Mail Express® Label No.	

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* 18] 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* 8]
6. **Inventor's Oath or Declaration** [*Total Pages* 2] *(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 _____
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: 151692 **OR** [ ] Correspondence address below

Name					
Address					
City		State		Zip Code	
Country		Telephone		Email	

Signature	/Robert L. Wolter/	Date	2021-06-11
Name (Print/Type)	Robert L. Wolter	Registration No. (Attorney/Agent)	36972

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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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.
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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.
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FEE TRANSMITTAL

Complete if known	
Application Number	
Filing Date	
First Named Inventor	Christopher M. SEATON
Examiner Name	
Art Unit	
Practitioner Docket No.	12914-003C2

☐ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

TOTAL AMOUNT OF PAYMENT ($) 6,160.00

METHOD OF PAYMENT (check all that apply)

☐ Check ■ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☐ Deposit Account Deposit Account Number: _____ Deposit Account Name: _____

For the above-identified deposit account, the Director is hereby authorized to (check all that apply):

☐ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**

☐ Charge any additional fee(s) or underpayment of fee(s) under 37 CFR 1.16 and 1.17 ☐ Credit any overpayment of fee(s)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES (U = undiscounted fee; S = small entity fee; M = micro entity fee)

	FILING FEES			SEARCH FEES			EXAMINATION FEES			
Application Type	**U ($)**	**S ($)**	**M ($)**	**U ($)**	**S ($)**	**M ($)**	**U ($)**	**S ($)**	**M ($)**	**Fees Paid ($)**
Utility	320	160*	80	700	350	175	800	400	200	1,820.00
Design	220	110	55	160	80	40	640	320	160	
Plant	220	110	55	440	220	110	660	330	165	
Reissue	320	160	80	700	350	175	2,320	1,160	580	
Provisional	300	150	75	0	0	0	0	0	0	

* The $160 small entity status filing fee for a utility application is further reduced to $80 for a small entity status applicant who files the application via EFS-Web.

2. EXCESS CLAIM FEES

Fee Description	**Undiscounted Fee ($)**	**Small Entity Fee ($)**	**Micro Entity Fee ($)**
Each claim over 20 (including Reissues)	100	50	25
Each independent claim over 3 (including Reissues)	480	240	120
Multiple dependent claims	860	430	215

Total Claims		**Extra Claims**	**Fee ($)**		**Fee Paid ($)**
20	-20 or HP =	0 x	0	=	0

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims		**Extra Claims**	**Fee ($)**		**Fee Paid ($)**
2	-3 or HP =	0 x	0	=	

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims	
Fee ($)	**Fee Paid ($)**
0	0

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $420 ($210 for small entity) ($105 for micro entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets		**Extra Sheets**		**Number of each additional 50 or fraction thereof**	**Fee ($)**		**Fee Paid ($)**
26	- 100 =		/ 50 =	(round **up** to a whole number) x	0	=	0

4. OTHER FEE(S)

	Fees Paid ($)
Non-English specification, $140 fee ($70 for small entity) ($35 for micro entity)	0
Non-electronic filing fee under 37 CFR 1.16(t) for a utility application, $400 fee ($200 small or micro entity)	0
Other (e.g., late filing surcharge): 37 CFR 1.17(i)(1) processing fee of $140 and 37 CFR 1.17(c) prioritized examination fee of $4,200	4,340.00

SUBMITTED BY

Signature	/Robert L. Wolter/	Registration No. (Attorney/Agent) 36972	Telephone 407-926-7706
Name (Print/Type)	Robert L. Wolter		Date 2020-06-11

This collection of information is required by 37 CFR 1.136. 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, 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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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND

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:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Christopher M. SEATON Date (Optional) 2/26/17

Signature: _____

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.**

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

PTO/AIA/01 (05-12)
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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	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND

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:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Timothy R. SEATON Date (Optional): 2/28/17

Signature: _____

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.**

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

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	12914-003C2
	Application Number	
Title of Invention	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND	

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
	Christopher	M.	SEATON	

Residence Information (Select One) ● US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
Tampa	FL	US

Mailing Address of Inventor:

Address 1	9625 Orangegrove Dr.
Address 2	
City	Tampa
State/Province	FL
Postal Code	33718
Country	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Timothy	R.	SEATON	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
Tampa	FL	US

Mailing Address of Inventor:

Address 1	1726 Fore Dr.
Address 2	
City	Tampa
State/Province	FL
Postal Code	33612
Country	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).

DBR Finance, Inc., Ex. 1006

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	12914-003C2
	Application Number	
Title of Invention	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND	

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

Customer Number	151692		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND		
Attorney Docket Number	12914-003C2	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	8	**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

Publication Information:

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

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

Representative Information:

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

Please Select One:	● Customer Number	US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	151692		

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	12914-003C2
	Application Number	
Title of Invention	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND	

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	16998843	2020-08-20

Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16998843	Continuation of	15444909	2017-02-28	10765108	2020-09-08

Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
15444909	Claims benefit of provisional	62301007	2016-02-29

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

Foreign Priority Information:

This section allows for the applicant to claim 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

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	12914-003C2
	Application Number	
Title of Invention	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND	

☐ 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	12914-003C2
	Application Number	
Title of Invention	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND	

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 (11-15)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	12914-003C2
	Application Number	
Title of Invention	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND	

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	RUGGED CROSS HUNTING BLINDS LLC		
Mailing Address Information For Applicant:			
Address 1	9260 Lazy Lane		
Address 2			
City	Tampa	**State/Province**	FL
Country	US	Postal Code	33614
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.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	12914-003C2
	Application Number	
Title of Invention	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND	

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	/Robert L. Wolter/			Date (YYYY-MM-DD)	2021-06-11
First Name	ROBERT L.	Last Name	WOLTER	Registration Number	36972

Additional Signature may be generated within this form by selecting the Add button. Add

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	12914-003C2
	Application Number	
Title of Invention	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND	

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.

FIG. 1A

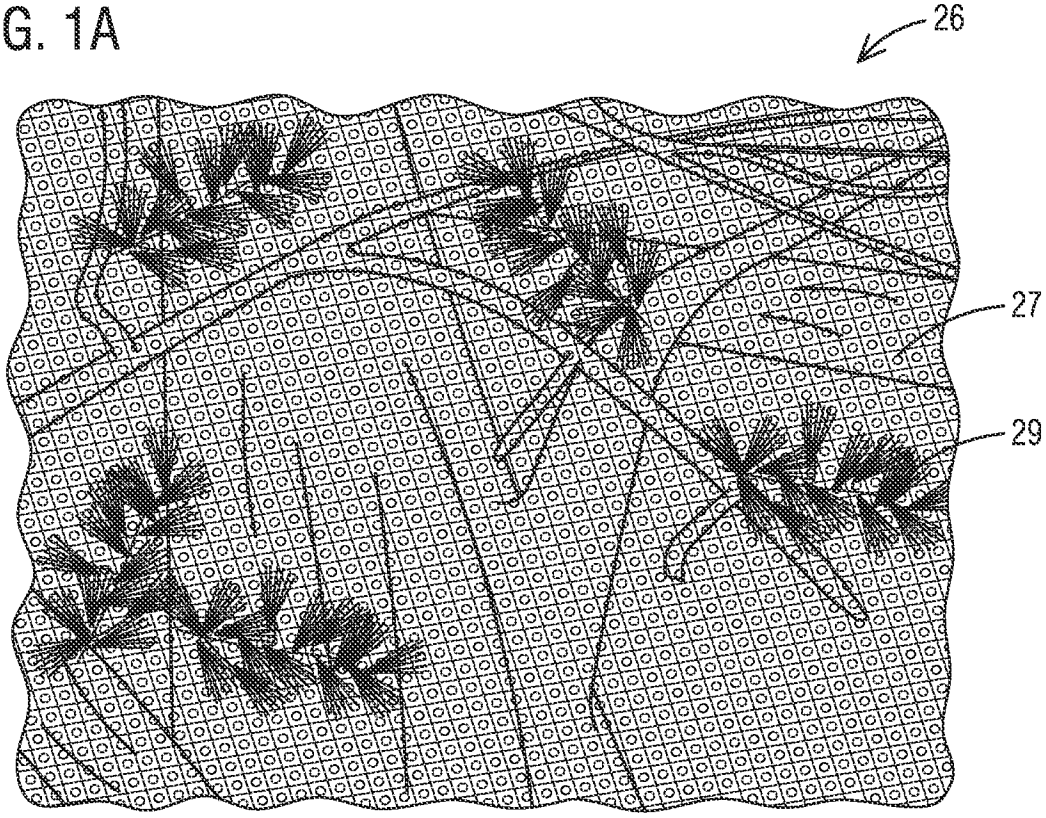


FIG. 1B

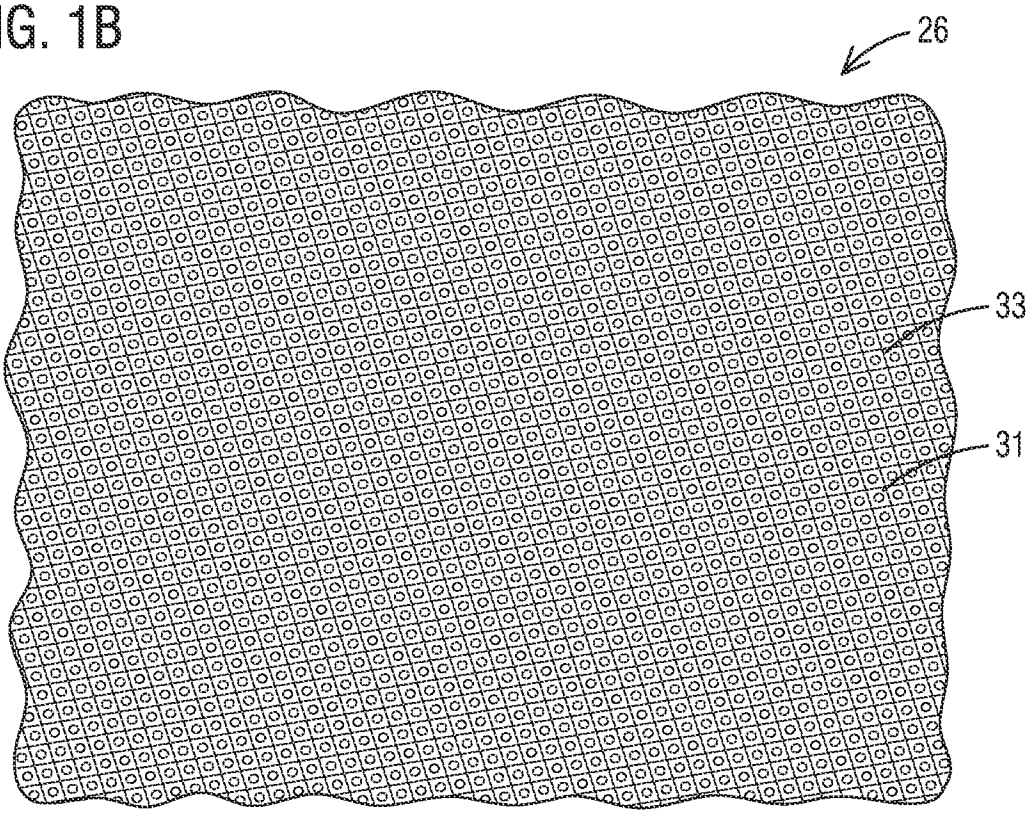


FIG. 1C

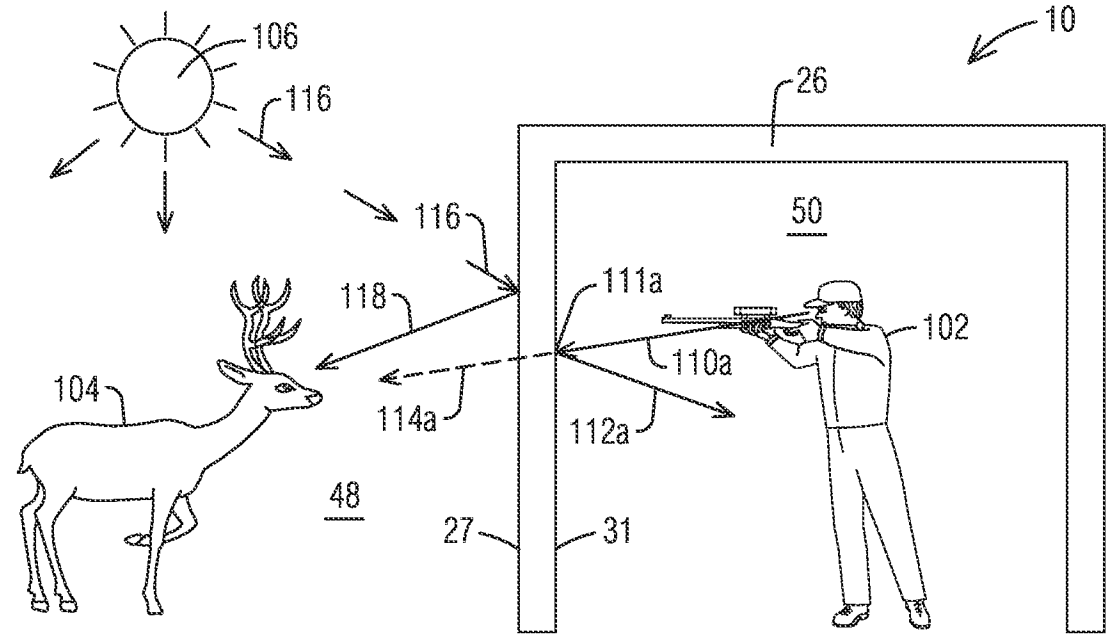
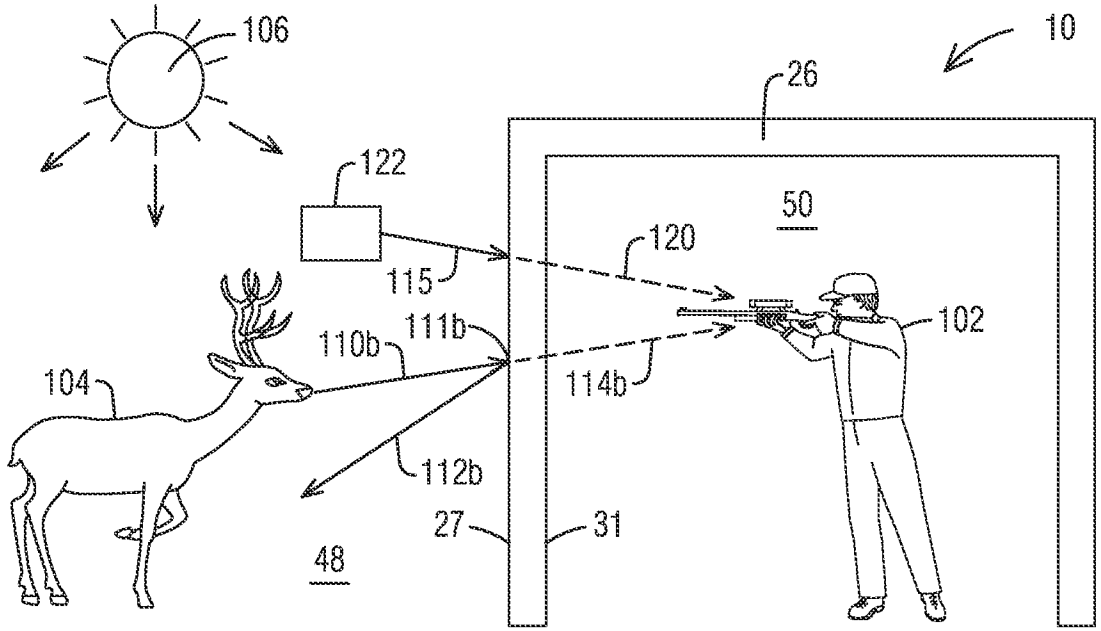


FIG. 1D



DBR Finance, Inc., Ex. 1006

FIG. 2

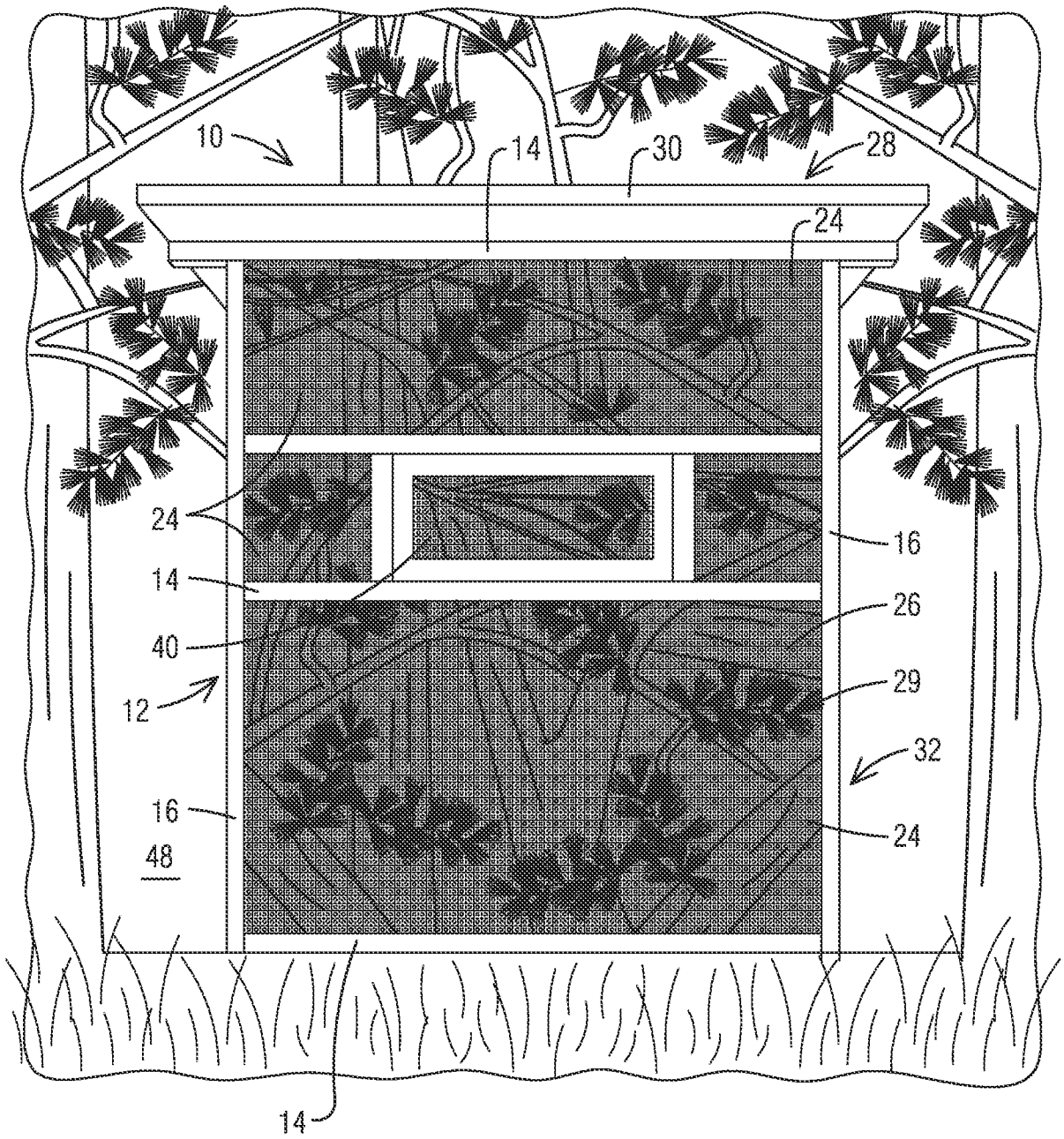


FIG. 3A

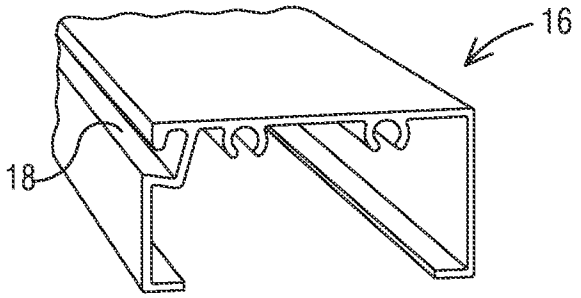


FIG. 3B

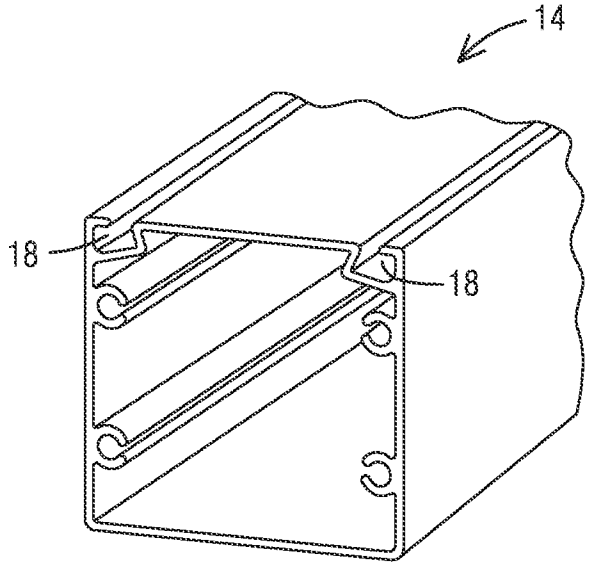


FIG. 4

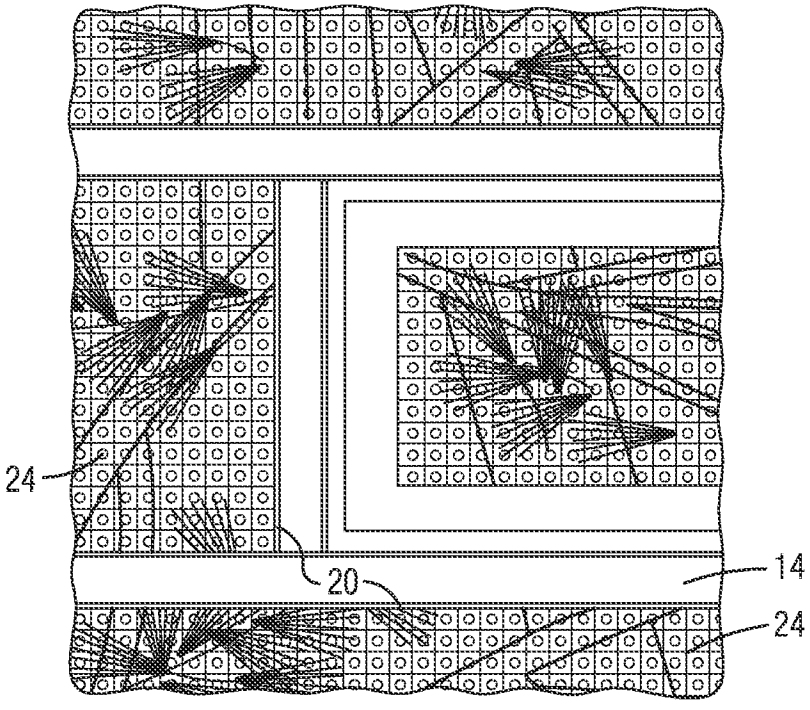


FIG. 5

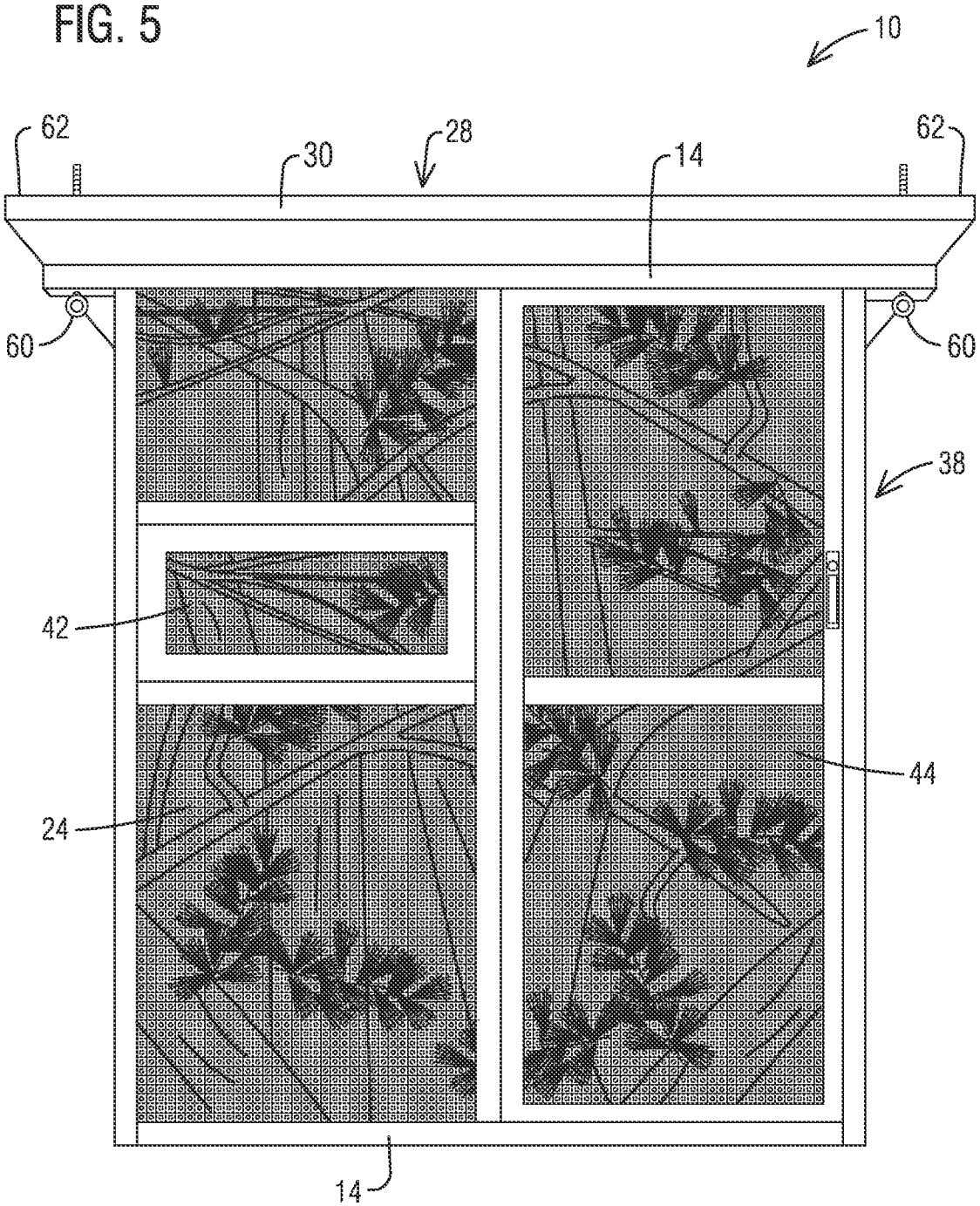
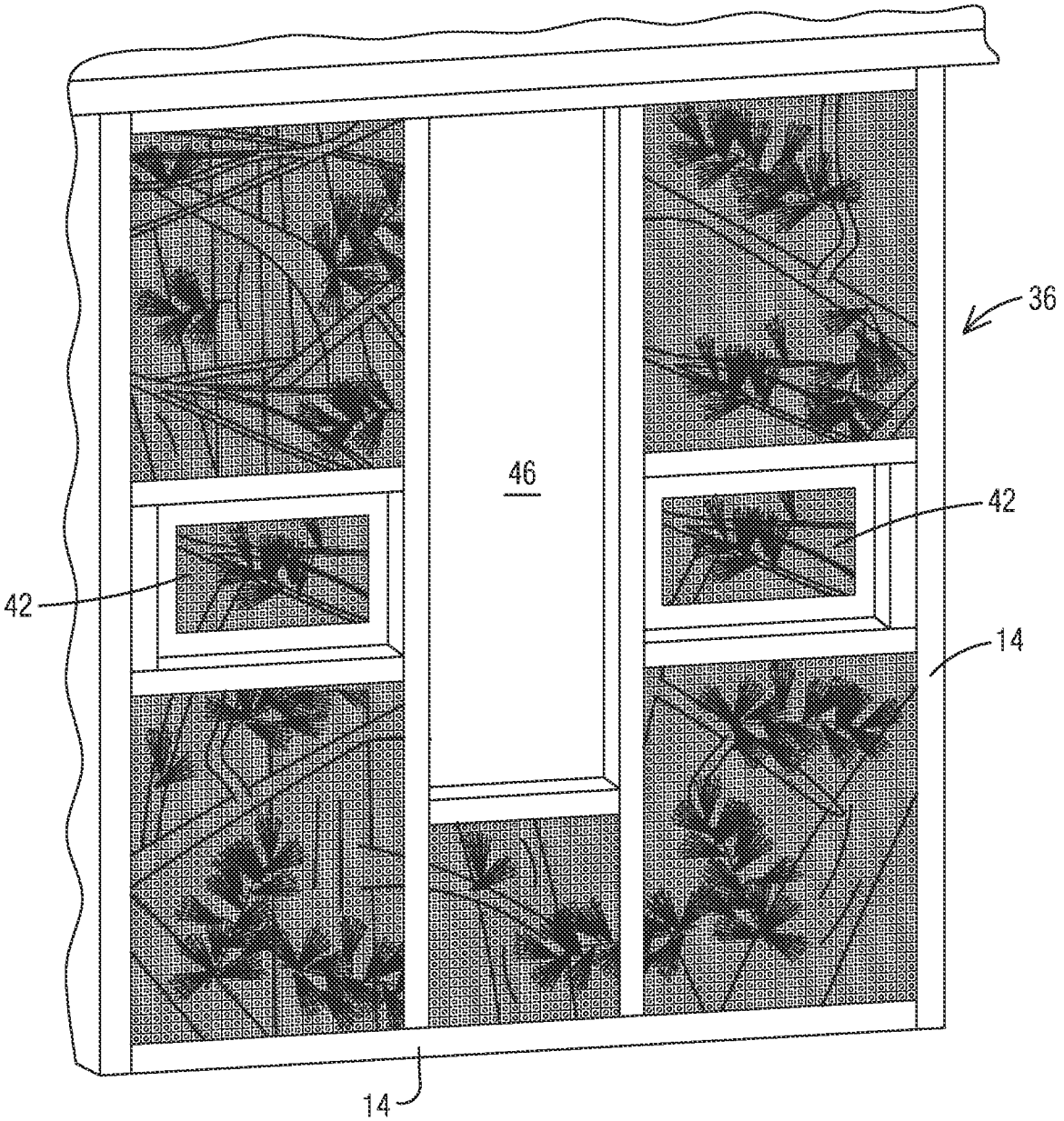


FIG. 6



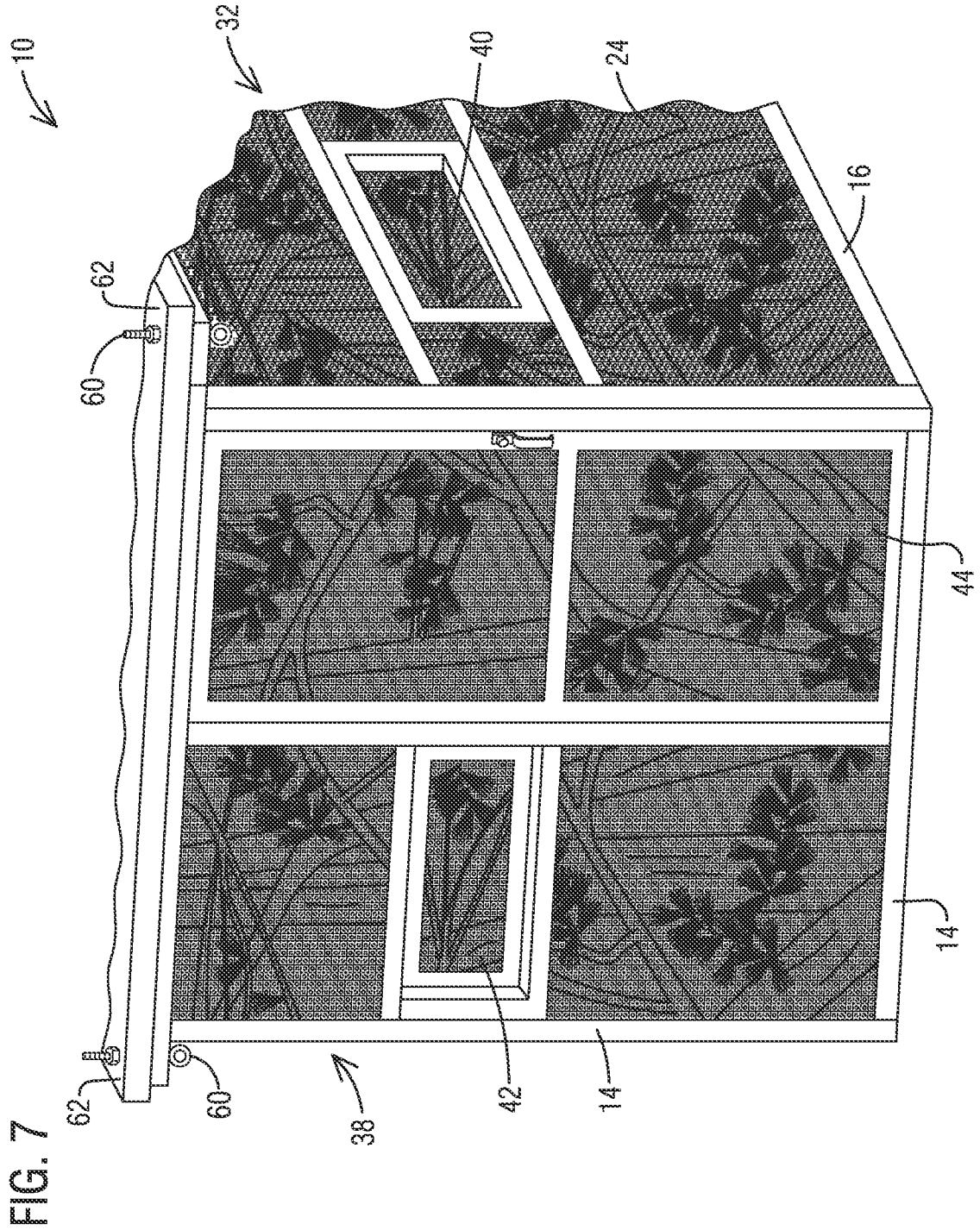


FIG. 7

FIG. 8

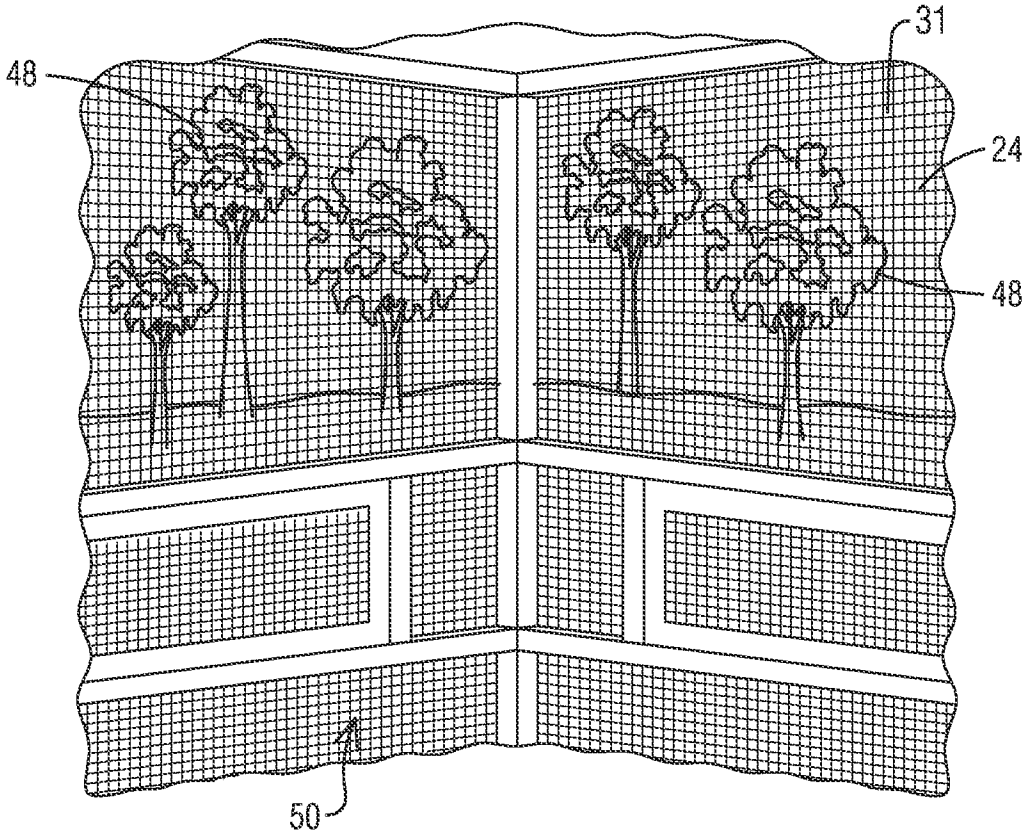
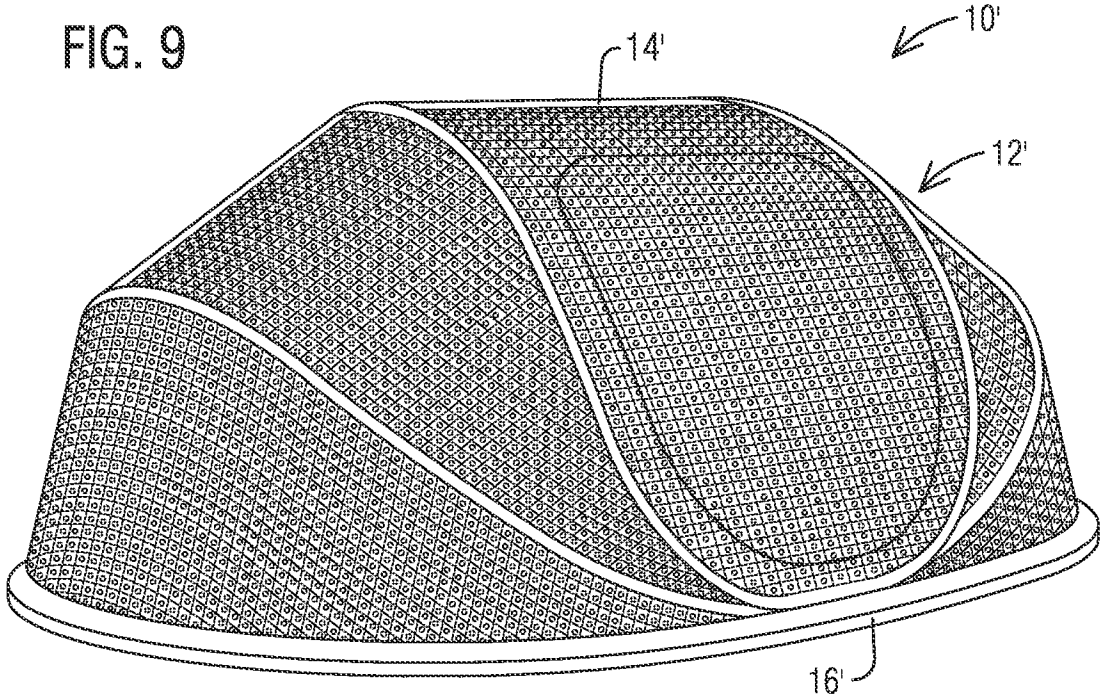


FIG. 9



CAMOUFLAGE MATERIAL FOR A HUNTING BLIND

BACKGROUND OF THE INVENTION

[01] Hunting blinds are used to conceal a hunter's location as game approaches. Although conventional hunting blinds have been developed, they have several drawbacks. For example, conventional hunting blinds have limited structural integrity and thus are not capable of withstanding elements of the outdoors. Additionally, conventional hunting blinds feature structures with closed panels that provide limited ventilation. Thus, these hunting blinds have limited use in high humidity hunting climates.

BRIEF DESCRIPTION OF THE INVENTION

[02] In one embodiment of the invention, mesh material of interwoven fabric is provided for a hunting blind including a camouflage pattern printed on a first side and a second side with a dark color coating, the second side opposite to the first side. The mesh material is partially transmissive such that a portion of incident radiation from an exterior of the hunting blind is reflected off the camouflage pattern on the first side back into the exterior, a portion of incident radiation from an interior of the hunting blind is transmitted through the mesh material to the exterior and wherein a ratio of an intensity of the reflected portion to an intensity of the transmitted portion during daylight conditions is above a threshold value such that the exterior of the hunting blind is visible through the mesh material from the interior of the hunting blind and the interior of the hunting blind is not visible through the mesh material from the exterior of the hunting blind during daylight conditions.

[03] In another embodiment of the invention, a hunting blind is provided including a frame with a plurality of frame members and panels of mesh material attached to the frame members that cover an area between the frame members to define an interior of the hunting blind.

[04] In another embodiment of the invention, a mesh material is provided that is capable of being secured to a frame of a hunting blind. The mesh material includes a camouflage pattern printed on a first side of the mesh material that faces an exterior of the hunting blind and a single color coating on a second side of the mesh material that faces an interior of the hunting blind.

BRIEF DESCRIPTION OF THE DRAWINGS

[05] FIG. 1A is a perspective view of a first side of mesh material in accordance with aspects of embodiments of the invention;

[06] FIG. 1B is a perspective view of a second side of mesh material of FIG. 1A;

[07] FIG. 1C is a side cutaway view of the hunting blind of FIG. 2 depicting a ray diagram of light incident on the hunting blind from an interior of the hunting blind;

[08] FIG. 1D is a side cutaway view of the hunting blind of FIG. 2 depicting a ray diagram of light incident on the hunting blind from an exterior of the hunting blind;

[09] FIG. 2 is a side view of a hunting blind in accordance with aspects of embodiments of the invention;

[010] FIG. 3A is a perspective view of an open back extruded aluminum member used to form a frame of the hunting blind of FIG. 2;

[011] FIG. 3B is a perspective view of a hollow extruded aluminum member used to form the frame of the hunting blind of FIG. 2;

[012] FIG. 4 is a view of an interconnection between extruded members and mesh material in the hunting blind of FIG. 2;

[013] FIG. 5 is a back view of the hunting blind of FIG. 2;

[014] FIG. 6 is a perspective front view of the hunting blind of FIG. 2 with an open bow window;

[015] FIG. 7 is a perspective back view of the hunting blind of FIG. 2;

[016] FIG. 8 is a view of an exterior of the hunting blind through mesh material from an interior of the hunting blind of FIG. 2; and

[017] FIG. 9 is a side view of a hunting blind in accordance with aspects of embodiments of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[018] A more particular description of the invention briefly described above will be rendered by reference to specific embodiments thereof that are illustrated in the appended drawings. Understanding that these drawings depict only typical embodiments of the invention and are not therefore to be considered to be limiting of its scope, the invention will be described and explained.

[019] The inventors of the present invention designed an improved hunting blind that overcomes the above noted drawbacks of conventional hunting blinds. In one example, the inventors of the present invention recognized that conventional hunting blinds have limited structural integrity and thus are not capable of withstanding elements of the outdoors. To overcome this noted drawback, the inventors of the present invention designed a hunting blind with a frame that features interconnected extruded aluminum members that provide structural integrity to withstand elements of the outdoors. While some embodiments of the present invention disclose a hunting blind with a frame including rigid interconnected members, the present invention is not limited to this arrangement and also features a hunting blind with a frame including flexible frame members. In another example, the inventors of the present invention recognized that conventional hunting blinds are formed with closed panels that provide limited ventilation and thus have limited use in high humidity hunting climates. To overcome this noted drawback, the inventors of the present invention designed a hunting blind with panels of mesh material that simultaneously provide ventilation to an interior of the hunting blind and camouflage the interior of the hunting blind.

[020] In selecting an appropriate mesh material to form the improved hunting blind, the inventors of the present invention recognized that conventional mesh material used in connection with hunting has notable drawbacks. For example, the inventors recognized that such conventional mesh material easily catches and tears on branches as an individual wearing the mesh material moves through dense woods. In another example, the inventors recognized that such conventional mesh material is relatively light and transparent and thus would not effectively camouflage the interior of the hunting blind. To overcome these noted drawbacks, the inventors of the present invention selected a mesh material that is heavier and/or more durable than the conventional mesh material used in connection with hunting. This mesh material advantageously provides an effective camouflage to the interior of the hunting blind and is more durable thereby extending a projected lifetime of the hunting blind.

[021] Although some embodiments of the present invention discuss the use of mesh material in the context of hunting blinds, the present invention is not limited to this context and includes all uses of camouflage material in the context of hunting. In other embodiments, the camouflage material (e.g. mesh material 26) can be used to form a ground blind or stake out blind that is mounted in the ground to conceal an individual positioned behind the blind. In still

other embodiments, the camouflage material can be used to form windows or tree sand skirts. For purposes of this invention, "camouflage material" means material that is used to cover people, equipment and/or installations, such as the hunting blinds discussed herein, to make them blend in with their surroundings.

[022] FIG. 1A is a perspective view of a first side 27 of mesh material 26 in accordance with aspects of embodiments of the invention. FIG. 1B is a perspective view of a second side 31 of mesh material 26 of FIG. 1A that is opposite to the first side 27. Panels of mesh material 26 are used to form an improved hunting blind, as discussed below. As shown in FIG. 1A, the first side 27 of the mesh material 26 features a camouflage pattern 29. In an example embodiment, the camouflage pattern 29 is based on an exterior environment where the hunting blind will be positioned.

[023] In an example embodiment, the camouflage pattern 29 is based on a photograph of the exterior environment of the hunting blind, and the camouflage pattern 29 can be printed on the first side 27 using ink. As shown in FIG. 1B, the second side 31 of the mesh material 26 includes a dark color coating, such as dark colored ink 33. However, in other embodiments, any color coating, such as any colored ink can be coated on the second side 31, including white colored coating, blue colored coating, red colored coating, yellow colored coating, green colored coating, orange colored coating and purple colored coating. In some embodiments, an exterior surface of the second side 31 is coated with the dark colored ink 33. In other embodiments, dark colored mesh material 26 is used and thus the second side 31 does not need to be coated with dark colored ink 33. In this embodiment, only the first side 27 of the mesh material 26 needs to be printed with the camouflage pattern 29. In some embodiments, for purposes of this description, "dark colored ink" means a colored ink that absorbs a substantial portion of incident visible light. In an example embodiment, the dark colored ink absorbs 50% or more of incident visible light. In another example embodiment, the dark colored ink absorbs 80% or more of incident visible light, for example. In other embodiments, for purposes of this description, "dark colored ink" means one or more of black colored ink, brown colored ink, grey colored ink, dark black colored ink, dark brown colored ink, dark grey colored ink, light brown colored ink, light grey colored ink, dark red colored ink, dark green colored ink, dark blue colored ink, dark purple colored ink, dark orange colored ink, dark yellow colored ink, or any combination thereof. In

still other embodiments, "dark colored ink" means one or more color coded inks provided by ink manufacturers, as discussed below.

[024] In an example embodiment, panels of the mesh material 26 are oriented on the hunting blind such that the first side 27 is directed toward the exterior of the hunting blind and the second side 31 is directed toward the interior of the hunting blind. During daylight conditions, the exterior of the hunting blind is visible from the interior of the hunting blind, but the interior of the hunting blind is not visible from the exterior of the hunting blind. FIG. 1C is a side cutaway view of the hunting blind 10 of FIG. 2 depicting a ray diagram of visible light incident on the hunting blind 10 from an interior 50 of the hunting blind 10. A hunter 102 is positioned in the interior 50 of the hunting blind 10 and game 104 (e.g. deer) is positioned in an exterior 48 of the hunting blind 10. In some embodiments, the hunting blind 10 is used during daylight conditions, when the sun 106 emits radiation 116. The hunter 102, game 104 and sun 106 are not part of the hunting blind 10. As depicted in FIG. 1C, incident radiation 110a from the hunter 102 is incident on the second side 31 of the mesh material 26. A first portion 111a of the incident radiation 110a is absorbed by the coating of the second side 31. In some embodiments, the dark colored ink of the second side 31 is selected to maximize the absorbed portion 111a of the incident radiation 110a. In other embodiments, an intensity ratio of the absorbed portion 111a to the incident radiation 110a for the second side 31 is greater than an intensity ratio of the absorbed portion 111b to the incident radiation 110b for the first side 27. A second portion 112a of the incident radiation 110a is reflected off the second side 31 back into the hunting blind interior 50. A third portion 114a of the incident radiation 110a is transmitted through the mesh material 26 to the game 104. As further depicted in FIG. 1C, radiation 116 from the sun 106 is incident on the camouflage pattern 29 on the first side 27 of the mesh material 26. A portion 118 of the incident radiation 116 is reflected off the camouflage pattern 29 to the game 104. In some embodiments, an intensity of the reflected portion 118 of light from the camouflage pattern 29 is much greater than an intensity of the transmitted portion 114a of light from the interior 50 (e.g. hunter 102). Since the intensity of the light from the camouflage pattern 29 is much greater than the intensity of the light from the interior 50 (e.g. hunter 102), the interior 50 of the hunting blind 10 is not visible from the exterior 48 of the hunting blind 10. For purposes of this description, "much greater" is based on the threshold value of the intensity ratio discussed below. Instead, the camouflage pattern 29 is visible from the exterior 48 and conceals

the interior 50 of the hunting blind 10. In an example embodiment, the radiation discussed above is in one or more regions of the visible portion (e.g. 400-700 nm) of the optical spectrum that overlaps with a detection spectrum of game 104. In other embodiments, the radiation discussed above is in a detection spectrum of game 104, including one or more regions of the visible portion and ultra-violet (UV) portions of the spectrum. In one embodiment, the camouflage pattern 29 on the first side 27 and colored coating on the second side 31 are selected such that a ratio of the intensity of the reflected portion 118 to the intensity of the transmitted portion 114a during daylight conditions is more than a threshold value such that the interior 50 of the hunting blind 10 is not visible from the exterior 48 of the hunting blind 10. In one embodiment, the threshold value is 1. In other embodiments, the threshold value is 2. In still other embodiments, the threshold value is 5. In still other embodiments, the threshold value is 10. In still other embodiments, the threshold value is 100.

[025] FIG. 1D is a side cutaway view of the hunting blind 10 of FIG. 2 depicting a ray diagram of visible light incident on the hunting blind 10 from the exterior 48 of the hunting blind 10. As depicted in FIG. 1D, incident radiation 110b from the game 104 is incident on the first side 27 of the mesh material 26. A first portion 111b of the incident radiation 110b is absorbed by the camouflage pattern 29 on the first side 27. A second portion 112b of the incident radiation 110b is reflected off the first side 27 back to the exterior 48. A third portion 114b of the incident radiation 110b is transmitted through the mesh material 26 to the interior 50 (e.g. hunter 102). As further depicted in FIG. 1D, radiation 115 from an object 122 (e.g. tree) in the exterior 48 is incident on the camouflage pattern 29 on the first side 27 of the mesh material 26. A portion 120 of the incident radiation 115 is transmitted through the mesh material 26 to the interior 50 (e.g. hunter 102). In some embodiments, an intensity of the transmitted portion 114b of light from the game 104 is approximately equal to an intensity of the transmitted portion 120 from the object 122. For purposes of this description, "approximately equal" is based on a range of intensity ratio, as discussed below. Since the intensity of the light from the game 104 is approximately equal to the intensity of the light from the object 122, the exterior 48 of the hunting blind 10 is visible from the interior 50 of the hunting blind 10. In an example embodiment, distinct forms (e.g. game 104, object 122, etc.) in the exterior 48 are visibly distinguishable, as viewed from the interior 50 of the hunting blind 10. In this embodiment, the hunter 102 can visibly distinguish the game 104 from other parts of the exterior 48 (e.g. object

122) since the intensity of the light from the game 104 is approximately equal to the intensity of light from other parts of the exterior 48 (e.g. object 122). In one embodiment, the camouflage pattern 29 on the first side 27 and colored coating on the second side 31 are selected such that a ratio of the intensity of the transmitted portion 114b to the intensity of the transmitted portion 120 during daylight conditions is approximately equal to 1. In other embodiments, the ratio is in a range from 0.9 – 1.1. In still other embodiments, the ratio is in a range from 0.8 – 1.2. In still other embodiments, the ratio is in a range from 0.5 – 2. In still other embodiments, the ratio is in a range from 0.2 – 5. In still other embodiments, the ratio is in a range from 0.1 – 10.

[026] Different types of ink and printing techniques can be used to print the camouflage pattern 29 on the first side 27 and the dark colored ink 33 on the second side 31. Each ink includes a colorant (e.g. dye or pigment) and a carrier liquid (e.g. solvent). A defining quality of each ink is the process used to adhere the colorant to the mesh material 26.

[027] In some embodiments, a solvent based ink is used to print the camouflage pattern 29 on the first side 27 and the dark colored ink 33 on the second side 31. Solvent ink refers to an oil-based solution that holds a colorant (e.g. pigment), and is advantageously fade-resistant, waterproof and resistant to abrasion. During a printing process of the solvent-based ink, the solvent ink (i.e. colorant and solvent) is printed on the mesh material 26, after which the solvent evaporates or is flashed off with heaters on the printer, leaving the colorant behind. In an embodiment, the solvent based ink resists fading for five to seven years. In one embodiment, a region where the printing is performed is vented to exhaust volatile organic compounds (VOC) that are present during the solvent printing process.

[028] In other embodiments, an eco-solvent based ink is used to print the camouflage pattern 29 on the first side 27 and the dark colored ink 33 on the second side 31. In an example embodiment, eco solvent ink is used that is sold under the ECO SOL MAX® brand name. Eco-solvent ink is made using ether extracts taken from refined mineral oil. The eco-solvent ink printing process is similar to solvent ink printing, with the exception that eco-solvent ink takes longer to dry and venting is not required since VOC are not present during the printing process. The eco-solvent ink can be removed by alcohol and glass cleaner and accordingly, the durability of eco-solvent ink is reduced as compared to solvent ink. In some embodiments, eco-solvent ink resists fading for two to three years, which is reduced from the period of solvent ink. In an embodiment, manufacturers offer eco-solvent inks in various color sets. In an example

embodiment, manufacturers offer color coded inks using letters, including cyan (C), magenta (M), yellow (Y), black (K), light cyan (LC), light magenta (LM), light black (LK), white, silver and metallic. In an example embodiment, one or more of the black (K), light black (LK), silver and metallic colored inks can be used to print the dark colored ink 33 on the second side 31.

[029] In other embodiments, a latex based ink is used to print the camouflage pattern 29 on the first side 27 and the dark colored ink 33 on the second side 31. Latex ink is a pigmented, water-based ink that uses an aqueous-dispersed polymer. As with the eco-solvent based ink, there is no VOC and accordingly, no venting is required during the latex ink printing process. In one embodiment, the camouflage pattern 29 on the first side 27 and dark colored ink 33 on the second side 31 comes out of the printer completely cured. In some embodiments, radiant heaters with airflow are incorporated into the printer to evaporate the latex ink liquid, which causes the latex polymer particles to coalesce, forming a polymer layer that adheres to the mesh material 26 and encapsulates the pigment. In other embodiments, the printer uses ceramic radiated plates for a constant and even heat source.

[030] In other embodiments, an ultra-violet (UV) based ink is used to print the camouflage pattern 29 on the first side 27 and the dark colored ink 33 on the second side 31. UV based ink includes oligomer and monomer acrylate resins and photo initiators. During the printing process, after the ink is applied to the mesh material 26, the ink is exposed to UV radiation such that free radicals are released that cause the polymerization of the compound to harden to a dry ink film. The pigment is then encapsulated within this film. In some embodiments, the UV radiation is applied with a light emitting diode (LED) source (i.e. low-heat, long-life) or a mercury arc lamp (i.e. higher heat, shorter life). Unlike the solvent based ink, the UV based ink does not evaporate and instead is "cured" when the UV light system of the printer passes overhead. Due to a low viscosity of the UV based inks and since UV based inks do not penetrate the mesh material 26, the camouflage pattern 29 on the first side 27 and dark colored ink 33 on the second side 31 can be advantageously printed using a reduced volume of UV based ink, as compared to solvent based ink.

[031] In some embodiments, the mesh material 26 is a mesh banner material, for example. In one embodiment, the mesh material 26 is made of polyester. In an example embodiment, the mesh material 26 is made of polyester material that is coated with a PVC (polyvinyl chloride) film or backing. In an example embodiment, the mesh material 26 is a vinyl

coated polyester made of polyester scrim, a bonding or adhesive agent and an exterior PVC coating or backing. The scrim supports the coating and provides tensile strength, elongation, tear strength and dimensional stability of the resulting fabric. In some embodiments, vinyl-coated polyester is manufactured in large panels by heat-sealing an over-lap seam with either a radio-frequency welder or a hot-air sealer. In other embodiments, the mesh material 26 is made from a textile or cloth material that is a flexible material and includes a network of natural or artificial fibers (e.g. yarn or thread). In an example embodiment, the mesh material 26 is formed by yarn that is produced by spinning raw fibers of wool, flax, cotton or other material producing long strands. In other embodiments, the mesh material 26 is formed by textiles that are formed by weaving, knitting, crocheting, knotting or felting. In still other embodiments, the mesh material 26 is formed using synthetic textile material, including one or more of polyester, aramid fiber, acrylic fiber, nylon, spandex, olefin fiber, ingeo, lurex and carbon fiber. In another embodiment, the mesh material 26 features a PVC (polyvinyl chloride) backing. The PVC backing creates an air-tight print surface to prevent ink spraying through the mesh material 26 and helps to feed the mesh material 26 through the printer during the printing process. The PVC backing is removed from the mesh material after printing, such as by peeling the PVC backing off the polyester material. In another example embodiment, the mesh material 26 has a weight density of approximately 8 ounce (oz) per square yard (yd^2). In another example embodiment, the mesh material 26 is a coated polyester scrim mesh banner material. In an example embodiment, the mesh material 26 allows airflow in a range of 30-40%, such as 37%, for example, where airflow is defined as a ratio of a velocity of outgoing air from the mesh material 26 to a velocity of incident air onto the mesh material 26. In another example embodiment, the mesh material 26 has a tensile strength of approximately 160 x 160 pounds/inch and/or a tear strength of approximately 34 x 34 pounds/inch. In another example embodiment, the mesh material 26 has a low temperature crack threshold of approximately -22 degrees Fahrenheit (F). In another example embodiment, the mesh material 26 is fungus resistant and flame resistant, NFPA701, title 19, CSFM, ASTM E84.

[032] FIG. 2 is a side view of a first side 32 of a hunting blind 10 in accordance with aspects of embodiments of the invention. The hunting blind 10 includes a frame 12 with one or more frame members, such as aluminum extruded members 14, 16 that are interconnected together. In an example embodiment, the aluminum extruded member 14 is a 2" x 2" closed

hollow member and the aluminum extruded member 16 is a 1" x 2" open back member. FIG. 3A is a perspective view of an open back extruded aluminum member 16 that forms the frame 12 of the hunting blind 10 of FIG. 2. As shown in FIG. 3A, the extruded aluminum member 16 includes one spline groove 18 to receive a spline, as discussed below. FIG. 3B is a perspective view of a hollow extruded aluminum member 14 that forms the frame 12 of the hunting blind 10 of FIG. 2. As shown in FIG. 3B, the extruded aluminum member 14 includes a pair of spline grooves 18' to receive respective splines, as discussed below. In an example embodiment, 3" bronze sheet screws are internally screwed to attach interconnecting extruded members 14, 16. In an example embodiment, 10 ¾" text screws are used to attach clips in interconnected areas of the extruded members 14, 16 that are not internally screwed together.

[033] The hunting blind 10 also includes panels 24 of the mesh material 26 that are secured between aluminum extruded members 14, 16. In some embodiments, the panels 24 of the mesh material 26 are attached to the members 14, 16 of the frame 12 to cover an area between the members 14, 16 and define an interior of the hunting blind 10. In an example embodiment, the camouflage pattern 29 on the mesh material 26 is based on the exterior 48 of the hunting blind 10. FIG. 4 is a view of an interconnection between extruded members 14, 16 and panels 24 of mesh material 26 in the hunting blind 10 of FIG. 2. As shown in FIG. 4, a spline 20 is provided along a perimeter of the panel 24 and the spline 20 is positioned within one of the spline grooves 18 of the extruded member 14, to secure the panel 24 along the length of the extruded member 14. In an example embodiment, the spline 20 is a rubber spline. In some embodiments, the spline 20 secures a first side of the panel 24 within a spline groove 18 of a first extruded member 14, 16 and the spline 20 further secures a second side of the panel 24 within a spline groove 18 of a second extruded member 14, 16, where the first and second extruded members 14, 16 are interconnected to form the frame 12. In further embodiments, the spline 20 secures a third side of the panel 24 within a spline groove 18 of a third extruded member 14, 16 and the spline 20 secures a fourth side of the panel 24 within a spline groove 18 of a fourth extruded member 14, 16, where the first, second, third and fourth extruded members 14, 16 are interconnected to form the frame 12. In other embodiments, a respective spline 20 is used to secure each side of the panel 24 within a respective spline groove of the extruded member.

[034] FIG. 5 is a back view of the hunting blind 10 of FIG. 2. A roof 28 of the hunting blind 10 includes roof panels 30. In an example embodiment, the roof panels 30 have a high-

density polystyrene core and are laminated on both sides by stucco textured aluminum. In an example embodiment, the roof panels 30 are 2" Elite® aluminum panels. Anchor bolts 60 are secured through an extruded member 14 and the roof panels 30 at each corner 62 of the hunting blind 10. In an example embodiment, the anchor bolts 60 include a stainless steel eyebolt that is attached with a pair of washers and a hex nut. In an example embodiment, 3" bronze sheet screws (not shown) with neoprene washers are used to attach the roof panels 30 to the extruded members 14 that extend around a perimeter of an undersurface of the roof panels 30.

[035] The hunting blind 10 includes one or more doors and windows. Each door and window includes one or more panels 24 of mesh material 26 that forms an interior of the door or window and is interconnected to extruded members 14, 16 that form the frame of each door and window. As shown in FIG. 2, the first side 32 of the hunting blind 10 includes a window 40 that can be opened (inward to the interior of the blind 10) to provide a shooting position upon the approach of prey from the first side 32. Additionally, as shown in FIG. 5, a back side 38 of the hunting blind 10 includes a window 42 that provides a shooting position upon the approach of prey from the back side 38. FIG. 6 is a perspective front view of a front side 36 of the hunting blind 10 of FIG. 2 with an open bow window 46 that provides an arching position upon the approach of prey from the front side 36. In an example embodiment, dimensions of the windows 40, 42 are 26" (width) x 12" (height), for example. In an example embodiment, dimensions of the bow window 46 is 13" (width) x 46" (height), for example. Additionally, as shown in FIG. 5, a back side 38 of the hunting blind 10 includes a door 44 that can open (either inward or outward) for entry to the interior of the hunting blind 10. In an example embodiment, dimensions of the door 44 are 30" (width) x 66" (height), for example. In an example embodiment, the windows 40, 42, 46 or door 44 can be customized, in terms of length or width. In an example embodiment, the door 44 can be customized to have a width up to 48". In an example embodiment, the windows 40, 42, 46 and door 44 have a frame made of bronze extruded aluminum members. The above numerical dimensions of the windows 40, 42, 46 and door 44 are merely exemplary and the dimensions of the windows 40, 42, 46 and door 44 are not limited to any specific dimension. FIG. 7 depicts another view of the hunting blind 10, including the windows 40, 42 and door 44.

[036] In an example embodiment of the frame 12, the extruded members 14 are 2" x 2". In another example embodiment, a height of the frame 12 at the front side 36 is approximately 6'

and a width of the frame 12 at the front side 36 and back side 38 is approximately 5'4". As previously discussed, panels 24 of mesh material 26 are secured within the frames of each window 42, 46, to form the hunting blind 10. These numerical dimensions are merely exemplary and the frame 12 is not limited to these numerical dimensions.

[037] In an example embodiment of the frame 12, the extruded members 14 are 2" x 2" and the extruded members 16 are 1" x 2". In another example embodiment, a height of the frame 12 at the sides 32, 34 varies from a first height (e.g. 5'10") to a second height (e.g. 6') that is greater than the first height, to provide a pitch in the roof 28 for rainwater runoff. Additionally, a width of the frame 12 at the sides 32, 34 is approximately 5'. As previously discussed, panels 24 of mesh material 26 are secured within the frames of each window 40, to form the hunting blind 10. These numerical dimensions re merely exemplary and the frame 12 is not limited to these numerical dimensions.

[038] FIG. 8 is a view of the exterior 48 of the hunting blind 10 through panels 24 of mesh material 26 from an interior 50 of the hunting blind 10 of FIG. 2. The second side 31 of the mesh material 26 faces the interior 50 of the hunting blind 10. The mesh material 26 is partially transmissive such that during daylight conditions, the exterior 48 of the hunting blind 10 is visible from the interior 50 of the hunting blind 10 yet the interior 50 of the hunting blind 10 is not visible from the exterior 48 of the hunting blind 10. As depicted in the view of FIG. 9 since the panels 24 of mesh material 26 are provided on each side of the hunting blind 10, the hunting blind 10 provides a 360 degree view of the exterior 48 through the panels 24 in each side of the hunting blind 10.

[039] FIG. 9 is a side view of a hunting blind 10' in accordance with aspects of embodiments of the invention. The hunting blind 10' includes a frame 12' that is formed of interconnected flexible frame members 14', 16'. In an example embodiment, the hunting blind 10' has a structure that is similar to a pop-up tent. As with the hunting blind 10, the hunting blind 10' includes panels of the mesh material 26 that are secured between the flexible frame members 14', 16'. However, the panels differ from the panels 24 of the hunting blind 10, due to a variation in the spacing between the flexible frame members 14', 16' of the frame 12', as compared to the spacing between the frame members 14, 16 of the frame 12. Thus, although the frame 12 of the hunting blind 10 is a fixed frame including interconnected extruded members 14, 16, the frame 12 of the hunting blind is not limited to a fixed frame and may include a pop-up

frame 12' with foldable frame members 14', 16'. In an example embodiment, the pop-up frame includes panels of the mesh material 26 secured between the foldable frame members 14', 16' such that when the frame 12' is moved from a folded position to a deployed position, the exterior of the hunting blind 10' is visible through the panels from the interior of the hunting blind yet the interior of the hunting blind 10' is not visible through the panels from the exterior of the hunting blind 10'.

[040] While certain embodiments of the present invention have been shown and described herein, such embodiments are provided by way of example only. Numerous variations, changes and substitutions will occur to those of skill in the art without departing from the invention herein. Accordingly, it is intended that the invention be limited only by the spirit and scope of the appended claims.

WHAT IS CLAIMED IS:

1. A camouflage structure comprising:

a frame including a plurality of frame members, said plurality of frame members comprising at least two spaced apart frame members; and

one or more panels of mesh material of interwoven fabric configured to be attached between the least two spaced apart frame members, said one or more panels comprising;

a first side with a camouflage pattern; and

a second side with a color coating, said second side opposite to the first side.

2. The camouflage structure of claim 1, wherein the camouflage pattern comprises one or more ink substances printed on the first side and the color coating comprises a second ink substance printed on the second side.

3. The camouflage structure of claim 1, wherein the camouflage pattern is based on an exterior environment where the camouflage structure will be positioned to make the camouflage structure blend in with the exterior environment.

4. The camouflage structure of claim 1, wherein the color coating comprises a single color coating.

5. The camouflage structure of claim 4, wherein the single color coating is a dark color coating.

6. The camouflage structure of claim 5, wherein the dark color coating comprises at least one of a black color coating, a brown color coating, a grey color coating, a red color coating, a dark blue color coating, a dark purple color coating, a dark orange color coating and a dark yellow color coating.

7. The camouflage structure of claim 1, wherein the mesh material is made of polyester material and an acrylic fiber.

8. The mesh material of claim 1, wherein the mesh material is a vinyl-coated polyester material.

9. The mesh material of claim 1, wherein the mesh material is formed by weaving yarn material.

10. A camouflage structure comprising:

a frame including a plurality of frame members, said plurality of frame members comprising at least two spaced apart frame members; and

one or more panels of mesh material of interwoven fabric for the camouflage structure, said one or more panels comprising;

a first side with a camouflage pattern; and

a second side with a single dark color coating, said second side opposite to the first side;

wherein the mesh material is partially transmissive such that a portion of incident radiation from an exterior of the camouflage structure is reflected off the camouflage pattern back into the exterior, a portion of incident radiation from an interior of the camouflage structure is transmitted through the mesh material to the exterior and wherein a ratio of an intensity of the reflected portion to an intensity of the transmitted portion is above a threshold value such that an exterior of the camouflage structure is visible through the camouflage material from the interior of the camouflage structure and the interior of the camouflage structure is not visible through the mesh material from the exterior of the camouflage structure;

and wherein the threshold value is 1.

11. The camouflage structure of claim 1, wherein the mesh material is produced by;

printing the camouflage pattern on the first side of the mesh material using a first ink, and

printing the color coating including a single dark color coating on the second side of the mesh material using a second ink.

12. The camouflage structure of claim 1, wherein the panels of the mesh material define an outer surface of the camouflage structure.

13. The camouflage structure of claim 1, wherein the second side of the panels of the mesh material defines an interior of the camouflage structure and the first side of the panels of the mesh material defines an exterior of the camouflage structure; and

wherein the plurality of frame members are configured to form an enclosure that surrounds the interior.

14. The camouflage structure of claim 13, wherein the panels of mesh material provide a 360 degree view of the exterior of the camouflage structure from the interior of the camouflage structure.

15. The camouflage structure of claim 1, further comprising one or more panels of non-mesh material configured to be attached to the frame members and cover the area between the spaced apart frame members.

16. The camouflage structure of claim 15, wherein the panels of non-mesh material are non-transmissive such that incident radiation from an exterior of the camouflage structure is not transmitted through the non-mesh material.

17. The camouflage structure of claim 15, wherein the one or more panels of non-mesh material cover the area between the spaced apart frame members along a roof of the camouflage structure.

18. The camouflage structure of claim 1, wherein the frame is a pop-up frame including a plurality of flexible frame members.

19. The camouflage structure of claim 1, wherein the frame members have a variation in the spacing between the spaced apart frame members.

20. The camouflage structure of claim 1, further comprising one or more panels of non-mesh material configured to be attached to the frame members and cover the area between the spaced apart frame members;

wherein the frame is a pop-up frame including a plurality of flexible frame members;

wherein the second side of the mesh material is coated with a dark color coating; and

wherein the panels of the mesh material define an outer surface of the camouflage structure.

ABSTRACT

Mesh material is presented for a hunting blind with a camouflage pattern printed on a first side and a second side with a color coating. The mesh material is partially transmissive such that a portion of incident radiation from an exterior of the hunting blind is reflected back into the exterior, a portion of incident radiation from an interior of the hunting blind is transmitted through the mesh material to the exterior and an intensity ratio of the reflected portion to the transmitted portion during daylight conditions is above a threshold value such that the exterior of the hunting blind is visible from the interior and the interior of the hunting blind is not visible from an exterior of the hunting blind. A hunting blind is also provided that includes a frame including frame members and panels of the mesh material attached to the frame members.

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND
First Named Inventor/Applicant Name:	Christopher M. SEATON
Filer:	Robert L. Wolter./Cynthia Nugent
Attorney Docket Number:	12914-003C2

Filed as Large Entity

Filing Fees for Track I Prioritized Examination - Nonprovisional Application under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY APPLICATION FILING	1011	1	320	320
UTILITY SEARCH FEE	1111	1	700	700
UTILITY EXAMINATION FEE	1311	1	800	800
REQUEST FOR PRIORITIZED EXAMINATION	1817	1	4200	4200
Pages:				
Claims:				
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
PROCESSING FEE, EXCEPT PROV. APPLS.	1830	1	140	140
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**6160**

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Electronic Acknowledgement Receipt

EFS ID:	42969857
Application Number:	17345981
International Application Number:	
Confirmation Number:	6659
Title of Invention:	CAMOUFLAGE MATERIAL FOR A HUNTING BLIND
First Named Inventor/Applicant Name:	Christopher M. SEATON
Customer Number:	151692
Filer:	Robert L. Wolter./Cynthia Nugent
Filer Authorized By:	Robert L. Wolter.
Attorney Docket Number:	12914-003C2
Receipt Date:	11-JUN-2021
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1	TrackOne Request	12914003C2_Track1Request.pdf	124323 9f1500632b1d5c235cc0a4615386998ad31bc494	no	2
Warnings:					
Information:					
2	Power of Attorney	12914003C2_POA.pdf	2024037 2fcba634fe01d4e3a1705cf2482d1654f93a8b2d	no	2
Warnings:					
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3	Transmittal of New Application	12914003C2_Transmittal.pdf	295506 1845adbb68c0f15e70d16d1adcf3473df472c9e5	no	2
Warnings:					
Information:					
4	Fee Worksheet (SB06)	12914003C2_FeeTransmittal.pdf	242514 e81a0442ed0c5d0fddd86a5c511635175797d2a5	no	2
Warnings:					
Information:					
5	Oath or Declaration filed	12914003C2_Declarations.pdf	195043 294313a2ab65f492cfcdf28e509ad72c13ae0035	no	2
Warnings:					
Information:					
6	Application Data Sheet	12914003C2_ADS.pdf	1823203 4f37107c7f2caf719bfb33be2ffef733713e4ac4	no	9
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7	Drawings-only black and white line drawings	12914003C2_Drawings.pdf	1854594 693ef269e84496567bb2f33c072363ad070b01cc	no	8
Warnings:					
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8		12914003C2_Specification.pdf	80288 5662834598fc23039992bd31cc63b5cde152f7d6	yes	18

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	13
	Claims	14	17
	Abstract	18	18

Warnings:					
Information:					
9	Fee Worksheet (SB06)	fee-info.pdf	40144 4b3a4eee22d0c685b919ba4d3c8253530f936c08	no	2
Warnings:					
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