505165696 10/30/2018

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT5212464

| SUBMISSION TYPE: | NEW ASSIGNMENT |
|-----------------------|----------------|
| NATURE OF CONVEYANCE: | ASSIGNMENT |

CONVEYING PARTY DATA

| Name | Execution Date |
|-------------------|----------------|
| JUSTIN M. JOHNSON | 08/03/2018 |
| JAMES W. HOWARD | 10/15/2018 |
| JAMES B. SNYDER | 09/05/2018 |
| KUI CHEN-HO | 07/27/2018 |
| SUMAN K. PATEL | 07/25/2018 |
| TRAVIS L. POTTS | 08/15/2018 |
| CARLA H. BARNES | 07/25/2018 |
| TADESSE G. NIGATU | 07/25/2018 |

RECEIVING PARTY DATA

| Name: | 3M INNOVATIVE PROPERTIES COMPANY |
|-----------------|----------------------------------|
| Street Address: | P.O. BOX 33427 |
| City: | SAINT PAUL |
| State/Country: | MINNESOTA |
| Postal Code: | 55133-3427 |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 16097652 |

CORRESPONDENCE DATA

Fax Number:

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

Phone: 651-733-1500

Email: mekosloski@mmm.com

Correspondent Name: 3M INNOVATIVE PROPERTIES COMPANY

Address Line 1: PO BOX 33427

Address Line 4: ST. PAUL, MINNESOTA 55133-3427

| ATTORNEY DOCKET NUMBER: | 78407US009 |
|-------------------------|---------------------|
| NAME OF SUBMITTER: | MYCKI E. KOSLOSKI |
| SIGNATURE: | /Mycki E. Kosloski/ |

PATENT 505165696 REEL: 047351 FRAME: 0581

| DATE SIGNED: 10/30/2018 | | |
|---|--|--|
| | This document serves as an Oath/Declaration (37 CFR 1.63). | |
| Total Attachments: 8 | | |
| source=Executed Declaration and Assignment 78407US009#page1.tif | | |
| source=Executed Declaration and Assignment 78407US009#page2.tif | | |
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| source=Executed Declaration and Assignment 78407US009#page7.tif | | |

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Case No:

78407US009

As a below named inventor, I believe I am an original inventor or an original joint inventor of a claimed invention in the application and for which a patent is sought on the invention entitled:

| C | OUNTERFEIT | | PTICALLY ACT | VE ARTICLE USING SECURITY |
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| The sp | ecification of wh | ich: | | |
| ☐ is | attached hereto | • | | |
| | as filed on s United States <i>F</i> | Application No. | | |
| | identified as PC ed on | T International Application No. May 12, 2017 | 0. | PCT/US2017/032340 |
| The ab | ove-identified ap | oplication was made or autho | rized to be made by | me. |
| | | that any willful false statemen not more than 5 years, or bo | | ation is punishable under 18 U.S.C. 1001 by |
| and do 3M CO assigns continu by me termina all Lette thereto own na interna continu part up have b I do fur conside that ma and int | hereby assign a pMPANY, and a constant of the entire right parties (in whole constant of the entire right | and transfer unto the 3M INNo corporation of Delaware, have t, title, and interest in and to to or in part) of said application, with others (provided any such loyment with 3M COMPANY aminations, reissues, or exten ght to apply for Letters Paten any priority rights for such for ons, treaties, or otherwise), who or in part), renewal, reexamin intion or improvements thereof his assignment and transfer in yself and for my heirs, execu- er applications, assignments, eccessary by said Company, it | OVATIVE PROPERTING its principal office the said invention and and in and to any arch improvement is mand any of its existing its preign applications to itch have been or mation, reissue, or other, to be held and entot been made; tors, and administrational and documents, and successors, assigning its principal and inventors and administrations. | owledged, I have agreed to assign and transfer IES COMPANY, a wholly-owned subsidiary of at Saint Paul, Minnesota, its successors and application, and in and to any division or dall improvements in the said invention made de during, or within one year after the g or future subsidiaries), and in and to any and United States of America and countries foreign eventors' Certificates in foreign countries in its which such applications are entitled under y be granted thereon or on any divisional, er or further application based in whole or in loyed as fully and exclusively as they would ors, to execute and deliver without further a to perform such other acts as I lawfully may, as, and nominees, fully to secure its right, title, Models, or Inventors' Certificates in any and all |
| granted | | e said applications, to said 3N | | any and all Letters Patent which may be es Company, as the assignee of the entire right, |
| Legal | Name of Invento | or: | | |
| Just | in M. Johnso | | | |
| Inven | tor's Signature: | | Date: | |
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Case No:

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As a below named inventor, I believe I am an original inventor or an original joint inventor of a claimed invention in the application and for which a patent is sought on the invention entitled:

| | COUNTERFEI | T DETECTION OF AN OPTICA ELEMI | | IVE ARTICLE USING SECURITY |
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| The | specification of wh | ich: | | |
| | is attached hereto | | | |
| | was filed on as United States / | Application No. | | |
| \boxtimes | is identified as PC filed on | T International Application No. May 12, 2017 | | PCT/US2017/032340 |
| The | above-identified ap | oplication was made or authorized to | be made by | me. |
| | | that any willful false statement made not more than 5 years, or both. | in this declar | ration is punishable under 18 U.S.C. 1001 by |
| and 3M (assignment by notering there own intere cont part have | do hereby assign a COMPANY, and a gns, the entire right inuation (in whole one or made jointly whination of, my empetters Patent, reexeto (including the riname and to claim mational conventioninuation (in whole of the been by me had to the company of the said invested the company of the company o | and transfer unto the 3M INNOVATIVE corporation of Delaware, having its part, title, and interest in and to the said or in part) of said application, and in with others (provided any such improvement with 3M COMPANY and any aminations, reissues, or extensions to ght to apply for Letters Patent, Utility any priority rights for such foreign ans, treaties, or otherwise), which have or in part), renewal, reexamination, rention or improvements thereon, to be this assignment and transfer not been | VE PROPERTORING INVENTION AND APPLICATION APPLICATION AND APPLICATION APPLICATION APPLICATION AND APPLICATION APPLICATION APPLICATION APPLICATION APPLICATION APPLICATION APPL | owledged, I have agreed to assign and transfer TIES COMPANY, a wholly-owned subsidiary of at Saint Paul, Minnesota, its successors and displication, and in and to any division or and all improvements in the said invention made addeduring, or within one year after the ago or future subsidiaries), and in and to any and a United States of America and countries foreign nited States of America and countries in its a which such applications are entitled under any be granted thereon or on any divisional, are or further application based in whole or in joyed as fully and exclusively as they would cors, to execute and deliver without further |
| cons that and | sideration any furth may be deemed n | er applications, assignments, and do ecessary by said Company, its succe | ocuments, and essors, assigi | d to perform such other acts as I lawfully may, ns, and nominees, fully to secure its right, title, Models, or Inventors' Certificates in any and al |
| gran | | e said applications, to said 3M Innov | | any and all Letters Patent which may be les Company, as the assignee of the entire righ |
| | gal Name of Invent | | | |
| Ja | mes W. Howar | d | | |
| Inv | entor's Signature: | \bigcap | Date: | |
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Case No:

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As a below named inventor, I believe I am an original inventor or an original joint inventor of a claimed invention in the application and for which a patent is sought on the invention entitled:

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| | was filed on as United States | Application No. | | |
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| The | above-identified a | application was made or authorized to | be made by a | ne. |
| fine In action and It action assisted the continuous all Lither continuous and part | or imprisonment of dittion, for good a do hereby assign COMPANY, and a gns, the entire right inuation (in whole etters Patent, reed to (including the name and to clair mational conventicituation (in whole upon the said invented to the said | of not more than 5 years, or both. Indivaluable consideration, receipt of and transfer unto the 3M INNOVATIVE corporation of Delaware, having its part, title, and interest in and to the said or in part) of said application, and in with others (provided any such improployment with 3M COMPANY and an caminations, reissues, or extensions tright to apply for Letters Patent, Utility in any priority rights for such foreign a ons, treaties, or otherwise), which have or in part), renewal, reexamination, in | which is acknown of PROPERT or incipal office invention and and to any and wement is may of its existing the Models, or trapplications to been or may beld and enjection of the held and enjection of the held and enjection or may beld and enjection of the held and enjection of th | ation is punishable under 18 U.S.C. 1001 by owledged, I have agreed to assign and transfer IES COMPANY, a wholly-owned subsidiary of at Saint Paul, Minnesota, its successors and I application, and in and to any division or d all improvements in the said invention made de during, or within one year after the g or future subsidiaries), and in and to any and United States of America and countries foreign eventors' Certificates in foreign countries in its which such applications are entitled under y be granted thereon or on any divisional, ar or further application based in whole or in oyed as fully and exclusively as they would |
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| grar | | re said applications, to said 3M Innov | | any and all Letters Patent which may be as Company, as the assignee of the entire right, |
| Le | gal Name of Inven | | | |
| Ja | mes B. Snyde | r | | annum. |
| Inv | entor's Signature: | | Date: | |
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Case No:

78407US009

As a below named inventor, I believe I am an original inventor or an original joint inventor of a claimed invention in the application and for which a patent is sought on the invention entitled:

| COUNTERF | IT DETECTION OF AN OPTICA ELEM | ALLY ACTIVE ARTICLE USING SECURITY ENTS |
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| is attached her | eto; | |
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| is identified as filed on | PCT International Application No. May 12, 2017 | PCT/US2017/032340 |
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| and do hereby assig 3M COMPANY, and assigns, the entire ricontinuation (in who by me or made joint termination of, my e all Letters Patent, re thereto (including thown name and to clinternational convencentinuation (in who part upon the said in | in and transfer unto the 3M INNOVATIV a corporation of Delaware, having its p ight, title, and interest in and to the said ie or in part) of said application, and in ity with others (provided any such impro imployment with 3M COMPANY and an examinations, reissues, or extensions or right to apply for Letters Patent, Utility aim any priority rights for such foreign a fions, treaties, or otherwise), which hav le or in part), renewal, reexamination, r | which is acknowledged. I have agreed to assign and transfer VE PROPERTIES COMPANY, a wholly-owned subsidiary of principal office at Saint Paul, Minnesota, its successors and I invention and application, and in and to any division or and to any and all improvements in the said invention made overment is made during, or within one year after the sy of its existing or future subsidiaries), and in and to any and thereof, of the United States of America and countries foreigr y Models, or Inventors' Certificates in foreign countries in its applications to which such applications are entitled under we been or may be granted thereon or on any divisional, reissue, or other or further application based in whole or in a held and enjoyed as fully and exclusively as they would an made; |
| consideration any futhat may be deemed | irther applications, assignments, and di I necessary by said Company, its succ | nd administrators, to execute and deliver without further ocuments, and to perform such other acts as I lawfully may, essors, assigns, and nominees, fully to secure its right, title, Patent, Utility Models, or Inventors' Certificates in any and all |
| | the said applications, to said 3M Innov | tents to issue any and all Letters Patent which may be ative Properties Company, as the assignee of the entire right |
| Legal Name of Inv | antor: | |
| Kui Chen-Ho | | |
| Inventor's Signatur | . . | Date: |
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Case No:

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| was filed on | | | |
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| BM COMPANY, and a assigns, the entire right continuation (in whole continuation of, my empth Letters Patent, reeximereto (including the right name and to claim afternational convention ontinuation (in whole cart upon the said inverse been by me had to further agree for monsideration any further consideration any further consideration any further agree for monsideration any further agree for monsideration any further | corporation of Delaware, having it, title, and interest in and to the or in part) of said application, and with others (provided any such in allowed with 3M COMPANY and aminations, reissues, or extensic ight to apply for Letters Patent, Us any priority rights for such foreigns, treaties, or otherwise), which or in part), renewal, reexamination tion or improvements thereon, this assignment and transfer not leave and for my heirs, executors are applications. | its principal office said invention and in and to any ar approvement is mall any of its existing the said inventions to the said inventions to have been or mand, reissue, or other been made; and administrate and and and administrate and administrate said in the said and administrate and administrate said inventions and administrate and administrate said invention and administrate and administrate said invention and administrate said administrate said invention and administrate said administrate said administrate said administrate said | owledged, I have agreed to assign and transfer TES COMPANY, a wholly-owned subsidiary of at Saint Paul, Minnesota, its successors and application, and in and to any division or id all improvements in the said invention made de during, or within one year after the g or future subsidiaries), and in and to any and United States of America and countries foreign inventors' Certificates in foreign countries in its which such applications are entitled under y be granted thereon or on any divisional, are or further application based in whole or in oyed as fully and exclusively as they would burs, to execute and deliver without further to perform such other acts as I lawfully may. |
| nd interest as aforesai puntries; and do hereby authorize ar | d and to obtain or maintain Lette | rs Patent, Utility i | s, and nominees, fully to secure its right, title, Models, or Inventors' Certificates in any and all |
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| Suman K. Patel | | | |
| nventor's Signature: | | Date: | |
| SP K | | | 25/12 |

Case No:

78407US009

As a below named inventor, I believe I am an original inventor or an original joint inventor of a claimed invention in the application and for which a patent is sought on the invention entitled:

COUNTERFEIT DETECTION OF AN OPTICALLY ACTIVE ARTICLE USING SECURITY ELEMENTS

| | ELEMENT: | |
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| The specification of | which: | |
| is attached here | | |
| was filed on as United State | s Application No. | |
| is identified as filed on | PCT International Application No. May 12, 2017 | PCT/US2017/032340 |
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| 3M COMPANY, and assigns, the entire ricontinuation (in whole by me or made joint) termination of, my er all Letters Patent, rest thereto (including the own name and to clainternational conventionation (in whole part upon the said in | a corporation of Delaware, having its princip ght, litte, and interest in and to the said invent e or in part) of said application, and in and to y with others (provided any such improvement applyment with 3M COMPANY and any of its examinations, reissure, or extensions thereof or right to apply for Letters Patent, Utility Mode itions, treaties, or otherwise), which have been enor in part), resewal, reexamination, reissure | OPERTIES COMPANY, a wholly-owned subsidiary of all office at Saint Paul, Minnesota, its successors and from and application, and in and to any division or any and all improvements in the said invention made at is made during, or within one year after the existing or future subsidiaries), and in and to any and for the United States of America and countries foreign els, or Inventors' Certificates in foreign countries in its from to which such applications are entitled under nor may be granted thereon or on any divisional, or other or further application based in whole or in and enjoyed as fully and exclusively as they would be; |
| consideration any fur that may be deemed | ther applications, assignments, and docume necessary by said Company, its successors | ninistrators, to execute and deliver without further nts, and to perform such other acts as I lawfully may, , assigns, and nominees, fully to secure its right, title, , Utility Models, or Inventors' Certificates in any and all |
| I do hereby authorize granted upon any of title, and interest the | the said applications, to said 3M Innovative I | o issue any and all Letters Patent which may be Properties Company, as the assignee of the entire right |
| Legal Name of Inve | ntor | |
| Travis L. Potts | | |
| Inventor's Signature | The state of the s | S. Carlotte and the contract of the contract o |
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| COUNTERFEIT DETECTION OF AN OPTICALLY ACTIVE ARTICLE USING SECURITY ELEMENTS | | | | | |
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| and do hereby assign 3M COMPANY, and assigns, the entire rig continuation (in whole by me or made jointly termination of, my en all Letters Patent, resthereto (including the own name and to clainternational conventicontinuation (in whole part upon the said in have been by me had | and transfer unto the 3M INNOVATIV a corporation of Delaware, having its part, title, and interest in and to the said or in part) of said application, and in a with others (provided any such improving the said and any such improving the said and any such improving the said and the said a | E PROPERTIE rincipal office at invention and a and to any and a rement is made r of its existing o hereof, of the Ur Models, or Inve- oplications to what a been or may to rissue, or other r held and enjoy r made; | or future subsidiaries), and in and to any and nited States of America and countries foreign intors' Certificates in foreign countries in its nich such applications are entitled under pe granted thereon or on any divisional, or further application based in whole or in ed as fully and exclusively as they would | | |
| consideration any fur that may be deemed | ther applications, assignments, and do necessary by said Company, its succe | cuments, and to seors, assigns, | s, to execute and deliver without further s perform such other acts as I lawfully may, and nominees, fully to secure its right, title odels, or inventors' Certificates in any and all | | |
| I do hereby authorize granted upon any of title, and interest ther | | ents to issue an stive Properties | y and all Letters Patent which may be Company, as the assignee of the entire right | | |
| Legal Name of inve | ntor | | | | |
| Carla H. Barnes | ì | | | | |
| Inveptox's Signature | 102 | Date 7 | -75-7018 | | |

Case No

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| COUNTERFEIT DETECTION OF AN OPTICALLY ACTIVE ARTICLE USING SECURITY ELEMENTS | | | | | |
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| ⊠ i | is identified as PC | T International Application No. | | PCT/US2017/032340 | |
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| l her fine | reby acknowledge or imprisonment of | that any willful false statement mad fnot more than 5 years, or both. | e in this decla | ration is punishable under 18 U.S.C. 1001 by | |
| conti by manual Lermall Lermal | inuation (in whole of the or made jointly with ination of, my emp etters Patent, reexists to (including the ri- name and to claim national convention inuation (in whole of upon the said inves- been by me had to | or in part) of said application, and in with others (provided any such improperations) and an aminations, reissues, or extensions ght to apply for Letters Patent, Utilition any priority rights for such foreign as, treaties, or otherwise), which has or in part), renewal, reexamination, ation or improvements thereon, to be this assignment and transfer not be this assignment and transfer not be | d invention and and to any and to any and to any and overnent is many of its existing thereof, of the applications to the applications to the applications or othereof, or othereof, and ender, and and ender, and to and the and | at Saint Paul, Minnesota, its successors and dapplication, and in and to any division or and all improvements in the said invention made ade during, or within one year after the ag or future subsidiaries), and in and to any and United States of America and countries foreign and eventors' Certificates in foreign countries in its which such applications are entitled under any be granted thereon or on any divisional, iter or further application based in whole or in joyed as fully and exclusively as they would | |
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| in Carrie | nereby authorize ar ied upon any of the and interest thereir | salu applications, to said 31/1 innov | itents to issue vative Properti | any and all Letters Patent which may be es Company, as the assignee of the entire right, | |
| Leg | al Name of Invento | or: | *************************************** | and the second s | |
| Tac | desse G. Nigati | u | | | |
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PATENT REEL: 047351 FRAME: 0590

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