503144722 01/21/2015

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT3191334

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

CONVEYING PARTY DATA

| Name | Execution Date |
|------------------|----------------|
| Peter RUSSHARD | 12/11/2014 |
| Jason David BACK | 12/11/2014 |

RECEIVING PARTY DATA

| Name: | Rolls-Royce PLC | |
|-----------------|--------------------|--|
| Street Address: | 62 Buckingham Gate | |
| City: | London | |
| State/Country: | Great Britain | |
| Postal Code: | SW1E 6AT | |

PROPERTY NUMBERS Total: 1

| Property Type | Number | | |
|---------------------|----------|--|--|
| Application Number: | 14601673 | | |

CORRESPONDENCE DATA

Fax Number: (703)836-2787

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.

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ATTORNEY DOCKET NUMBER: 164576

NAME OF SUBMITTER: SAMUEL MCLAUGHLIN

SIGNATURE: /Samuel McLaughlin/

DATE SIGNED: 01/21/2015

Total Attachments: 2 source=Assign#page1.tif source=Assign#page2.tif

PATENT 503144722 REEL: 034774 FRAME: 0504

ASSIGNMENT (BEING FILED FOR DUAL PURPOSE UNDER 37 CFR 1.63(e)) For Application with Filing Date on or after September 16, 2012

ASSIGNMENT

| | Insert | (1) | PETER RUSSHARD | (2) | JASON DAVID BACK | |
|-------|--|---|---|--|---|---|
| (1-8) | Legal Name(s) | (3) | | (4) | | |
| | of Inventor(s) | (5) | | (6) | | |
| | | (7) | | (8) | | • |
| | | In consideration of the sum of one dollar (\$1.00) and other good and valuable consideration paid to each of the undersigned, the receipt and sufficiency of which are hereby acknowledged, each undersigned agrees to assign, and hereby does assign, transfer and set over to | | | | |
| (9) | Insert Name of Assignee | (9) | ROLLS-ROYCE PLC | | | |
| (10) | Insert Address of Assignee | (10) | 62 Buckingham Gate, London | , SWIE 6AT, Gre | at Britain | |
| | | the entineent | ire right, title and interest for the ion, and in all applications for pa- uation, international, confirmation | United States of A tent including any n, substitute and re | irs, successors, assigns and legal representatives, meries as defined in 35 U.S.C. §100, in the and all provisional, non-provisional, divisional, issue application(s), and all Letters Patent, by be granted on the invention known as | |
| (11) | Insert Identification such as Title, Case Number, or Foreign Application Number | (11) | TIME REFERENCE DERIVA | TION FROM TIN | IE OF ARRIVAL MEASUREMENTS | |
| | | | 5433 VJAY | | | • |
| | | (Attor | ney Docket No. 164576 | ***************** |) | |
| (12) | Alternative | (12) | U.S. Application Number | 14/601,67 | 3 | |
| | Identification for filed applications | filed | January 21, 2015 | | | |

- 1) Each undersigned agrees to execute all papers necessary in connection with any application and/or patent for the invention and also to execute separate assignments in connection with such applications and patents as the Assignee may deem necessary.
- 2) Each undersigned agrees to execute all papers necessary in connection with any interference which may be declared concerning any application or patents for the invention and to cooperate with the Assignee in every way possible in obtaining evidence and going forward with such interference.
- 3) Each undersigned agrees to execute all papers and documents and perform any act which may be necessary in connection with claims or provisions of the International Convention for Protection of Industrial Property or similar agreements.
- 4) Each undersigned agrees to perform all affirmative acts which may be necessary to obtain, maintain or confirm by reissue or reexamination a grant of a valid United States patent to the Assignee.
- 5) Each undersigned authorizes and requests the Commissioner of the U.S. Patent and Trademark Office and other issuing authorities to issue any and all patents resulting from said application(s) to the said Assignee, as Assignee of the entire interest, and covenants that he has full right to convey the entire interest herein assigned, and that he has not executed, and will not execute, any agreement(s) in conflict herewith, and agrees that this assignment is hinding on Assignor and Assignor's heirs, successors, assigns and legal representatives.
- 6) Each undersigned hereby grants the firm of OLIFF PLC the power to insert on this assignment any further identification that may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

(13) Declaration

As an above named inventor, I hereby declare that:

I believe I am the original inventor or an original joint inventor of a claimed invention (or claimed design) in the above-identified application for which this declaration is being submitted.

The application was made or authorized to be made by me.

I have reviewed and understand the contents of the above-identified application, including the claims, and am aware of the duty to disclose to the Office all information known to me to be material to patentability as defined in 37 CFR §1.56.

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.

PATENT REEL: 034774 FRAME: 0505

| | In witne | ess whereof, c | executed by the un- | dersigned on the date(s) op | eleganta bengierabus the undersigned namedes |
|---------|-------------------|----------------|---------------------|--|--|
| Date | 11 | DEC | 2014 | Inventor Signature | PETER RUSSHARD Y. (SEAL) |
| Date | 11, | DEC | 2014 | Inventor Signature | JASON DAVID BACK ASSOCIATION (SEAL) |
| Date | ainhankininahkink | | | Inventor Signature | (SEAL) |
| neither | | | | ned before: (a) a Notary Pub o witnesses who also sign he | olic if within the U.S.A. (b) a U.S. Consul if autside the U.S.A. II |
| Date | | 12/2 | 2014 | Witness for Peter Russhard | - C.M.h.l |
| Date | | 12/20 | o/4 | Witness for Peter Russhard | Boil Mittelt |
| Date | 11/ | 12/2 | 014 | Witness for Jason David Back | C.M. hol |
| Date | 11/1 | 12/20 | 1/4 | Witness for Jason David Back | Bosel Metelell. |