#### 04/12/2019 505424965

# PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT5471756

| SUBMISSION TYPE:  | NEW ASSIGNMENT              |                |
|---|-----------------------------|----------------|
| NATURE OF CONVEYANCE:   | ASSIGNMENT                  |                |
| CONVEYING PARTY DATA  |                             |                |
|   | Name                        | Execution Date |
| CHARLOTTE MARIE DUJOL   |                             | 03/04/2019     |
| SÉBASTIEN SERGE FRANCIS CON   | GRATEL                      | 03/04/2019     |
| PATRICE ENEAU   |                             | 03/04/2019     |
| LÉANDRE OSTINO  |                             | 03/04/2019     |
| MICHEL SLUSARZ  |                             | 03/04/2019     |
| RECEIVING PARTY DATA  |                             |                |
| Name: SAFRAN A  | IRCRAFT ENGINES             |                |
| Street Address: 2 BOULEV  | ARD DU GÉNÉRAL MARTIAL VALI | N              |
| City: PARIS   |                             |                |
| State/Country: FRANCE   |                             |                |
| Postal Code: 75015  |                             |                |
| PROPERTY NUMBERS Total: 1 Property Type Number  |                             |                |
| Property TypeApplication Number:1634  | 41540                       |                |
|   | 1340                        |                |
| CORRESPONDENCE DATA   |                             |                |
| Fax Number: (216  | 6)579-6073                  |                |
| Correspondence will be sent to the  |                             |                |
| using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.<br>Phone: 216-579-1700 |                             | t via US Mail. |
|   | es@pearne.com               |                |
|   | RNE & GORDON LLP            |                |
|   | EAST 9TH STREET             |                |
| Address Line 2: SUI   | E 1200                      |                |
| Address Line 4: CLEVELAND, OHIO 44114-3108  |                             |                |
|   | BRV5-60636                  |                |
| ATTORNEY DOCKET NUMBER:   | 21110 00000                 |                |
| ATTORNEY DOCKET NUMBER:<br>NAME OF SUBMITTER:   | AARON A. FISHMAN            |                |
| NAME OF SUBMITTER:  |                             |                |
|   | AARON A. FISHMAN            |                |

| source=BRV5-60636-CDec-Assign_signed#page1.tif |  |
|--|--|
| source=BRV5-60636-CDec-Assign_signed#page2.tif |  |
| source=BRV5-60636-CDec-Assign_signed#page3.tif |  |
| source=BRV5-60636-CDec-Assign_signed#page4.tif |  |
| source=BRV5-60636-CDec-Assign_signed#page5.tif |  |
|  |  |

845 5331651 12528

## Worldwide Assignment & US Declaration (37 CFR 1.63)

for utility or design application using an application data sheet (37 CFR 1.76)

**Complete** Address

As a below named inventor. Thereby declare that, I

|               | ******                                  |
|---------------|---|
|               |   |
| Inventor Name |   |
|               |   |
|               | *************************************** |
|               |   |

78 avenue du Général de Gaulie 77850 LE MEI SUR JEINE FRANCE

(Hereinafter referred to as the Assignor) have made an invention entitled:

Title of Invention (in English)

# Turbomachine blade with optimised cooling

Title of Invention (in French)

DUJOL, Charlotte, Marie

for which an application for tetters Patent has been filed in the following country:

| Country | Filing Date | Serial Number |
|---------|-------------|---------------|
| ERANCE  | OC3-20-20x6 | 1601528       |
|         |             |               |

The above identified application(1) was/were made or authorized to be made by me.

believe that there enginal inventor or an original joint inventor of a claimed invention in the application.

AND, WHEREAS,

| Corporation Name       | Complete Address   |
|------------------------|--|
| SAFRAN ARCEAFT ENGINES | z soulevard du general Martial Valin 75015 raris riringe |
|                        |  |
|                        |  |
| E                      |  |

(Hereinafter referred to as the Assignce(s)) is/are desirous of securing the entire right, title, and interest in and to this invention in all countries throughout the world, and in and to the efforementioned applications for Laster's Patent on this invention and the Letter's Patent to be issued upon these applications:

NOW THEREPORE, be it known that for and in consideration of One EURO (£1.00) and other good and valuable consideration, the rarelpt and sufficiency of which from the Assignee(s) is hereby acknowledged, by these prevents, I, the Assignor, have sold, assigned, transferred, and set over, and do hereby self, astigntransfer and set over unto the Assignee(s), its/their lawful successors and assigns, my entire right, title, and interest in and to this membron and these applications, and all divisions, and continuations thereof, and all tenters Patent that may be granted thereor, and all reissues thereof, and all rights to claim priority on these of such applications, and all applications for Letters Patent that may be granted thereor, and all reissues thereof, and all rights to claim priority on these of his invention in any country, and all extensions, renewals, and reissues thereofi and i hereby sufficience and request the Commissioners of Patents for the appropriate official whose duty is to issue battents of the Dinted States, Canada, and any other country, to issue Letters Patent for this invention to the Assignee(s). Lythich successors and assigns, in accordance with the terms of this Assignment;

ARES, I MEREBY covenant that I have the full right to convey the interest assigned by this Assignment, and I have not executed and will not execute any agreement in conflict with this Assignment;

AND, I KEREBY further covenant and agree that I will communicate with the Assignee[s], its/their successors and assigns, any facts known to me respecting this invention, testify in any legal proceedings, sign all lawful papers when called upon to do so, execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in and Assignee[s], its/their successors or assigns, execute all divisional, continuation, reissue, and reexamination applications, make all rightful oaths and generally do everything possible to aid the Assignee[s], its/their successors and assigns, to obtain and enforce proper patent protection for this invention in any country, it being understood that, irrespective of whether I am in the employ of the Assignee[s], or fis/their affiliates, any expense incident to the performance of the obligations of the present paragraph shall be borne by the Assignee[s], its/their successors, and assigns.

This Assignment agreement is effective as of the earliest filing date mentioned above.

AND, I/WE REPERT acknowledge that any willul faise statement made in this declaration is punishable under 18 U.S.C. 1001 by floe or imprisonment of not more than five (5) years, or both.

IN TESTIMONY WHEREDF, I HAVE SIGNED:

| Date          | Place      | Inventor Name & Signature | Witness Name & Signature |
|---------------|------------|---------------------------|--------------------------|
| March 4, 2019 |            | DUJOL, Charlotte, Marie   | Sémilit, Ledie           |
|               | VILLAROOME | cduje/                    | Schnell                  |

PATENT REEL: 048878 FRAME: 0342

### Worldwide Assignment & US Declaration (37 CFR 1.63) for utility or design application using an application data sheet (37 CFR 1.76)

As a below named inventor, I hereby declare that, I

| Inventor Nome                        | Complete Address                                       |
|--------------------------------------|--|
| CONGRATEL, Sébástica, Serge, Francis | 36 route de Chevinois 77940 LA BROESE MONTCEAUX FRANCE |
|                                      |  |

(Hereinafter referred to as the Assignor) have made an invention entitled:

| Tinle | of Invention (in English)               |
|-------|---|
| Tu    | rbomachine blade with optimised cooling |
| Title | of Invention (in French)                |
|       |   |

for which an application for Letters Patent has been filed in the following country:

| Country | Filing Date | Servai Number |  |
|---------|-------------|---------------|--|
| FRANCE  | QC7-20-2036 | 1603523       |  |
|         |             |               |  |

The above-identified application(s) was/were 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.

AND WHEREAS.

| Corporation Name        | Complete Address                                       |
|-------------------------|--|
| SAFRAN AIRCRAFT ENGINES | 2 ROULEVARD DU GENERAL MARTIAL VAUN 75015 PARIS FRANCE |
|                         |  |
|                         |  |

(Hereinafter referred to as the Assignee(s)) is/are desirous of securing the entire right, title, and interest in and to this invention in all countries throughout the world, and in and to the aforementioned applications for Letters Patent on this invention and the Letters Patent to be assued upon these applications:

NOW THEREFORE, be it known that for and in consideration of One EURO (£1.00) and other good and valuable consideration, the receipt and sufficiency of which from the Assignee[s] is hereby acknowledged, by these presents, I, the Assignor, have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer and set over unto the Assignee(s), its/their lawful successors and assigns, my entire right, title, and interest in and to this invention and these applications. and all divisions, and continuations thereof, and all Letters Patent that may be granted thereon, and all reissues thereof, and all rights to claim priority on these of such applications, and all applications for Letters Patent that may hereafter be filed for this invention in any country and all Letters Patent that may be granted on this invention in any country, and all extensions, renewals, and reissues thereof; and I hereby authorize and request the Commissioners of Patents (or other appropriate official whose duty is to issue patents) of the United States, Canada, and any other country, to issue Letters Patent for this invention to the Assignee ].], its/their successors and assigns, in accordance with the terms of this Assignment;

AND, I HEREBY covenant that I have the full right to convey the interest assigned by this Assignment, and I have not executed and will not execute any agreement in conflict with this Assignment:

AND, I HEREBY further covenant and agree that I will communicate with the Assignee(s), its/their successors and assigns, any facts known to me respecting this invention, testify in any legal proceedings, sign all lawful papers when called upon to do so, execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee(s), its/their successors or assigns, execute all divisional, continuation, reissue, and reexamination applications, make all rightful paths and generally do everything possible to aid the Assignee(s), its/their successors and assigns, to obtain and enforce proper patent protection for this invention in any country, it being understood that, irrespective of whether i am in the employ of the Assignee(s) or its/their affiliates, any expense incident to the performance of the obligations of the present paragraph shall be borne by the Assignee(s), its/their successors, and assigns:

This Assignment agreement is effective as of the earliest filing date mentioned above.

AND, I/WE HEREBY acknowledge that any willful faise statement made in this declaration is pumshable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

IN TESTIMONY WHEREOF, I HAVE SIGNED:

| Date          | Piace | Inventor Nome & Signature            | Witness Name & Signature   |
|---------------|-------|--------------------------------------|----------------------------|
| March 4, 2019 | ÊAU   | CONGRATEL, Sébastien, Serge, Francis | BESSY, Arroad Andre arfred |

## Worldwide Assignment & US Declaration (37 CFR 1.63)

#### for utility or design application using an application data sheet (37 CFR 1.76)

As a below named inventor, I hereby declare that, I

| - | Inventor Nome  | Complete Address  |
|---|----------------|---|
|   | ENEAU, Paurice | 1344 - Augunie de l'Europy 72550 MORSEY CRAMAYEL FRANCE |

(Hereinafter referred to as the Assignor) have made an invention entitled:

| Title of Invention (in English)      |       |
|--------------------------------------|-------|
| Turbomachine blade with optimised co | oling |
|                                      |       |
| Title of Invention (in French)       |       |
|                                      |       |
|                                      |       |

for which an application for Letters Patent has been filed in the following country:

|   | Country | Elling Bate | Serial Nomber |
|---|---------|-------------|---------------|
| - | (RANCE  | GC7-27-2018 | 2601923       |
|   |         |             |               |

The above-identified application(s) was/were made or authorized to be made by me.

: believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

#### AND, WHEREAS,

| Curporation Name        | Complete Address   |
|-------------------------|--|
| SAFRAN AIRCRAFT ENGINES | "2 BOULEVARD DU BENERAL MARTIAL VALIN 75015 RARIS FRAUCE |
|                         |  |
|                         |  |

(Hereinafter referred to as the Assignee(s)) is/are desirous of securing the entire right, title, and interest in and to this invention in all countries throughout the world, and in and to the aforementioned applications for Letters Patent on this invention and the Letters Patent to be issued upon these applications;

NOW THEREFORE; be it known that for and in consideration of One EURO (£1.00) and other good and valuable consideration, the receipt and sufficiency of which from the Assignee(s) is hereby asknowledged, by these presents. I, the Assignor, have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer and set over unto the Assignee(s), its/their lawful successors and assigns, my entire right, title, and interest in and to this invention and these applications, and all divisions, and continuations thereof, and all letters Patent that may be granted thereoir, and all reisses thereof, and all rights to claim priority on these of such applications, and all applications for Letters Patent that may be reacter be filed for this invention in any country and all letters Patent that may be granted in the receipt and i hereby authorize and request the Commissioners of Patents (or other appropriate official whose duty is to issue patents) of the United States, Canada, and any other country, to issue Letters Patent for this invention to the Assignee(s), in Syfher successors and assigns, in accordance with the terms of this Assignment;

AND, I HEREBY covenant that I have the full right to convey the interest assigned by this Assignment, and I have not executed and will not execute any agreement in conflict with this Assignment;

AND. I HEREBY further covenant and agree that i will communicate with the Assignee[s], its/their successors and assigns, any facts known to me respecting this invention, testify in any legal proceedings, sign all lawful papers when called upon to do so, execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee[s], its/their successors or assigns, execute all divisional, continuation, reissue, and reexamination applications, make all rightful oaths and generally do everything possible to aid the Assignee[s], its/their successors and assigns, to obtain and enforce proper patent protection for this invention in any country, it being understood that, irrespective of whether I am in the employ of the Assignee[s] or its/their affiliates, any expense incident to the performance of the obligations of the present paragraph shall be borne by the Assignee[s], its/their successors, and assigns.

This Assignment agreement is offective as of the earliest filing date mentioned above.

AND, I/WE HEREBY acknowledge that any willful faise 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

IN TESTIMONY WHEREOF, I HAVE SIGNED.

| Dote          | Place     | Inventor Norne & Signature | Witness Name & Signature |
|---------------|-----------|----------------------------|--------------------------|
| March 4, 2019 |           | ENEAU,FARME                | SLUSARZ, Medici          |
|               | тикальске | 1.2                        |                          |
|               |           | Survey and Second          |                          |

# Worldwide Assignment & US Declaration (37 CFR 1.63) for utility or design application using an application data sheet (37 CFR 1.76)

As a below named inventor, I hereby declare that, I

| Inventor Notice | Complete Address                           |
|-----------------|--|
| SEUSARZ, Nichoj | a jue du greniși a 186 77240 CESSON FRANCE |
|                 |  |

(Receivance referred to as the Assignor) have made an invention entitled:

| Title of Invention (in English) |                        |  |
|---------------------------------|------------------------|--|
| Turbomachine blade              | with optimised cooling |  |
| Title of Invention (in French)  |                        |  |
| }                               |                        |  |

for which an application for Letters Patent has been filed in the following country:

| Country | Eling Date  | Serial Number |
|---------|-------------|---------------|
| FRANCE  | 607-20-2016 | 1501322       |
|         |             |               |

The above-identified application(s) was/were 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.

AND, WHEREAS,

| Corporation Name        | Complete Address   |
|-------------------------|--|
| SAFRAN AIRCRAFT ENGINES | "? HOULEVARO DU GENERAL MARTIAL VALIN 7501S PARIS FRANCE |
|                         |  |
|                         |  |

(Hereinaher referred to as the Assignce(s)) is/are desirous of securing the entire right, title, and interest in and to this invention in all countries throughout the world, and in and to the aforementioned applications for Letters Patent on this invention and the Letters Patent to be issued upon these applications;

NOW THEREFORE, be it known that for and in consideration of One EURO (£1.00) and other good and valuable consideration, the receipt and sufficiency of which from the Assignee(s) is hereby acknowledged, by these presents, it the Assignor, have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer and set over unto the Assignee(s), its/their lawful successors and assigns, my entire right, liftle, and interest in and to this invention and these applications, and all divisions, and continuations thereof, and all letters Patent that may be granted thereon, and all relisses thereof, and all rights to claim priority on these of such applications, and all applications for Letters Patent that may be granted thereon; and all relisses thereof, and all rights to claim priority on these of this invention in any country, and all extensions, renewals, and reissues thereof; and it hereby authorize and request the Commissioners of Patents (or other appropriate official whose duty is to issue patents) of the United States, Canada, and any other country, to issue Letters Patent for this invention to the Assignee(s), its/their successors and assign, in accordance with the terms of this Assignment;

AND, I HEREBY covenant that I have the full right to convey the interest assigned by this Assignment, and I have not executed and will not execute any agreement in conflict with this Assignment;

AND, I HEREBY further covenant and agree that I will communicate with the Assignee[s], its/their successors and assigns, any facts known to me respecting this invention, testity in any legal proceedings, sign all lawful popers when called upon to do so, execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee[s], its/their successors or assigns, execute all divisional, continuation, reissue, and reexamination applications, make all rightful paths and generally do everything possible to aid the Assignee[s], its/their successors and assigns, to obtain and enforce proper patent protection for this invention in any country, it being understood that, irrespective of whether I am in the employ of the Assignee[s], its/their affiliates, any expense incident to the performance of the poligations of the present paragraph shall be borne by the Assignee[s], its/their successors, and assigns.

This Assignment agreement is effective as of the earliest filing date mentioned above.

AND, I/WE HERE8Y acknowledge that any willful fake 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.

IN TESTIMONY WHEREOF, I HAVE SIGNED:

| Date          | Place      | Inventor Name & Signature | Witness Name & Signatuse |
|---------------|------------|---------------------------|--------------------------|
| March 4, 2019 | Villanoche |                           | ENSAU, Patrice           |
|               |            |                           |                          |

8ef. \$1634011384

#### Worldwide Assignment & US Declaration (37 CFR 1.63) for utility or design application using an application data sheet (37 CFR 1.76)

As a below named inventor, I hereby declare that, I

| Inventor Name  | Complete Address               |
|--|--------------------------------|
| OSTINO, Léandre  | 9.1 for Dorf 77000 MHUN FRANCE |
| (Hereinafter referred to as the Assignor) have made an invention entitled: |                                |

 Title of invention (in English)

 Turbomachine blade with optimised cooling

 Title of invention (in French)

for which an application for Letters Patent has been filed in the following country:

| Country | Filing Date | Seriol Number |
|---------|-------------|---------------|
| FRANCE  | DC7-20-2635 | 1601523       |
|         |             |               |

The above-identified application(s) was/were made or authorized to be made by me.

t believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

AND, WHEREAS,

| Corporation Name        | Complete Address  |
|-------------------------|---|
| SAFRAN AIRCRAFT ENGINES | 2 BOULEVARD DU GENERAL MARTIAL VALIN 75015 FARIS FRANCE |
|                         |   |
|                         |   |
| 1                       |   |

(Mereinafter referred to as the Assignee(s)) is/are desirous of securing the entire right, title, and interest in and to this invention in all countries throughout the world, and in and to the aforementioned applications for Letters Patent on this invention and the Letters Patent to be issued upon these applications;

NOW THEREFORE, be it known that for and in consideration of One EURO (€1.00) and other good and valuable consideration, the receipt and sufficiency of which from the Assignee[s] is hereby acknowledged, by these presents, i, the Assignor, have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer and set over unto the Assignee[s], its/their lawful successors and assigns, my entire right, title, and interest in and to this invention and these applications, and all divisions, and continuations thereof, and all letters Patent that may be granted thereon, and all relissues thereof, and all rights to claim priority on these of such applications, and all applications for Letters Patent that may hereafter be filed for this invention in any country and all letters Patent that may be granted on this invention in any country, and all extensions, renewals, and reissues thereof; and I hereby authorize and request the Commissioners of Patents (or other appropriate officialwhose duty is to issue patents) of the United States, Canada, and any other country, to issue Letters Patent for this invention to the Assignee[s], its/their successors and assigns, in accordance with the terms of this Assignment;

AND, I HEREBY covenant that I have the full right to convey the interest assigned by this Assignment, and I have not executed and will not execute any agreement in conflict with this Assignment;

AND, I MEREBY further covenant and agree that I will communicate with the Assignee[s], its/their successors and assigns, any facts known to me respecting this invention, testify in any legal proceedings, sign all lawful papers when called upon to do so, execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee[s], its/their successors or assigns, execute all divisional, continuation, reissue, and reexamination applications, make all rightful oaths and generally do everything possible to ald the Assignee[s], its/their successors and assigns, to obtain and enforce proper patient protection for this invention in any country, it being understood that, irrespective of whether I am in the employ of the Assignee[s] or its/their affiliates, any expense incident to the performance of the obligations of the present paragraph shall be borne by the Assignee], its/their successors, and assigns.

This Assignment agreement is effective as of the carliest filing date mentioned above.

AND, I/WE HEREBY acknowledge that any willful fake statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of net more than five (5) years, or both.

IN TESTIMONY WHEREOF, I HAVE SIGNED

| Date          | Ріасн      | liventor Name & Signature    | Witness Name & Signature  |
|---------------|------------|------------------------------|---|
| March 4, 2019 | VILLAROCHE | OSTINO, Léandro              | DANKE, Port OVIN  |
|               | ÇEARKE     |                              |   |
|               |            | ship                         |   |
|               |            | atter patriction and a start | and the second |

**RECORDED: 04/12/2019**