

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT5753036

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	GRANT OF SECURITY INTEREST IN PATENT RIGHTS
CONVEYING PARTY DATA	
Name	Execution Date
TRIUMPH ACTUATION SYSTEMS - CONNECTICUT, LLC	09/23/2019
TRIUMPH AEROSTRUCTURES, LLC	09/23/2019
TRIUMPH CONTROLS, LLC	09/23/2019
TRIUMPH ENGINE CONTROL SYSTEMS, LLC	09/23/2019
TRIUMPH THERMAL SYSTEMS - MARYLAND, INC.	09/23/2019
RECEIVING PARTY DATA	
Name:	U.S. BANK NATIONAL ASSOCIATION, AS COLLATERAL AGENT
Street Address:	100 WALL STREET
Internal Address:	SUITE 600
City:	NEW YORK
State/Country:	NEW YORK
Postal Code:	10005
PROPERTY NUMBERS Total: 50	
Property Type	Number
Patent Number:	7654371
Patent Number:	6484381
Patent Number:	6502249
Patent Number:	10052670
Patent Number:	9038265
Patent Number:	9254539
Patent Number:	6708071
Patent Number:	8983801
Application Number:	16393519
Application Number:	16414737
Application Number:	16402780
Patent Number:	6298876
Patent Number:	6641085
Patent Number:	7136738
Patent Number:	6758044

PATENT

Property Type	Number
Patent Number:	6821093
Patent Number:	6986641
Patent Number:	7013210
Patent Number:	7083394
Patent Number:	6715277
Patent Number:	7058556
Patent Number:	6361270
Patent Number:	6375435
Patent Number:	6442925
Patent Number:	6474938
Patent Number:	6623250
Patent Number:	6634865
Patent Number:	6663357
Patent Number:	6719543
Patent Number:	6735955
Patent Number:	6768938
Patent Number:	6782314
Patent Number:	6786702
Patent Number:	6820429
Patent Number:	6843060
Patent Number:	6864808
Patent Number:	6879885
Patent Number:	6962485
Patent Number:	6996969
Patent Number:	7376504
Patent Number:	7770388
Patent Number:	8011909
Patent Number:	8277208
Patent Number:	8567201
Patent Number:	8596991
Patent Number:	6241392
Patent Number:	7207785
Application Number:	14836211
Application Number:	62810002
Patent Number:	8042354

CORRESPONDENCE DATA

Fax Number: (212)455-2502

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: (212)455-3346
Email: ksolomon@stblaw.com
Correspondent Name: MELANIE JOLSON, ESQ.
Address Line 1: SIMPSON THACHER & BARTLETT LLP
Address Line 2: 425 LEXINGTON AVENUE
Address Line 4: NEW YORK, NEW YORK 10017

ATTORNEY DOCKET NUMBER:	509335/2821
NAME OF SUBMITTER:	MELANIE JOLSON
SIGNATURE:	/MJ/
DATE SIGNED:	10/03/2019

Total Attachments: 12

source=Triumph - Patent Security Agreement (Executed)#page1.tif
source=Triumph - Patent Security Agreement (Executed)#page2.tif
source=Triumph - Patent Security Agreement (Executed)#page3.tif
source=Triumph - Patent Security Agreement (Executed)#page4.tif
source=Triumph - Patent Security Agreement (Executed)#page5.tif
source=Triumph - Patent Security Agreement (Executed)#page6.tif
source=Triumph - Patent Security Agreement (Executed)#page7.tif
source=Triumph - Patent Security Agreement (Executed)#page8.tif
source=Triumph - Patent Security Agreement (Executed)#page9.tif
source=Triumph - Patent Security Agreement (Executed)#page10.tif
source=Triumph - Patent Security Agreement (Executed)#page11.tif
source=Triumph - Patent Security Agreement (Executed)#page12.tif

GRANT OF
SECURITY INTEREST IN PATENT RIGHTS

This GRANT OF SECURITY INTEREST IN PATENT RIGHTS ("Agreement"), effective as of September 23, 2019 is made by the undersigned (each a "Grantor" and collectively, the "Grantors"), in favor of U.S. BANK NATIONAL ASSOCIATION, as collateral agent (the "Agent") for the Secured Parties (as defined below), in connection with the Security Agreement, dated as of September 23, 2019 (as amended, supplemented or otherwise modified from time to time, the "Security Agreement"), among TRIUMPH GROUP, INC. (the "Company"), each of its Subsidiaries (as defined therein) signatories thereto and the Agent.

W I T N E S S E T H:

WHEREAS, the Company and each of the other guarantors party thereto entered into the Indenture dated as of September 23, 2019 with the Agent as trustee and collateral agent, pursuant to which the Company is issuing, and may from time to time issue, 6.250% Senior Secured Notes due 2024 (the "Notes") upon the terms and subject to the conditions set forth therein;

WHEREAS, pursuant to the Security Agreement, each Grantor pledged and granted to the Agent for the benefit of the Agent and the other Secured Parties a continuing security interest in all U.S. Intellectual Property, all U.S. Intellectual Property agreements, and all Foreign Intellectual Property for which filings or other actions outside the United States are not required for perfection of the security interest granted, including the Patents; and

WHEREAS, each Grantor has duly authorized the execution, delivery and performance of this Agreement;

NOW THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, each Grantor agrees, for the benefit of the Agent and the Secured Parties, as follows:

Definitions. Unless otherwise defined herein or the context otherwise requires, terms used in this Agreement, including its preamble and recitals, have the meanings provided or provided by reference in the Security Agreement.

Grant of Security Interest. Each Grantor hereby pledges and grants a continuing security interest in, and a right of setoff against, and agrees to assign, transfer and convey, upon demand made upon the occurrence and during the continuance of an Event of Default without requiring further action by either party and to be effective upon such demand, all of such Grantor's right, title and interest in, to and under the Patents (including, without limitation, those items listed on Schedule A hereto) (collectively, the "Collateral"), to the Agent for the benefit of the Agent and the other Secured Parties.

Purpose. This Agreement has been executed and delivered by the Grantors for the purpose of recording the grant of security interest herein with the United States Patent and Trademark Office. The security interest granted hereby has been granted to the Secured Parties in

connection with the Security Agreement and is expressly subject to the terms and conditions thereof. The Security Agreement (and all rights and remedies of the Secured Parties thereunder) shall remain in full force and effect in accordance with its terms.

Acknowledgment. Each Grantor does hereby further acknowledge and affirm that the rights and remedies of the Secured Parties with respect to the security interest in the Collateral granted hereby are more fully set forth in the Indenture and the Security Agreement, the terms and provisions of which (including the remedies provided for therein) are incorporated by reference herein as if fully set forth herein. In the event of any conflict between the terms of this Agreement and the terms of the Security Agreement, the terms of the Security Agreement shall govern.

Counterparts. This Agreement may be executed in counterparts, each of which will be deemed an original, but all of which together constitute one and the same original.

TRIUMPH ACTUATION SYSTEMS – CONNECTICUT, LLC


By: 

Name: James F. McCabe, Jr.

Title: Vice President & Treasurer

[Signature page to IP Security Agreement]

TRIUMPH AEROSTRUCTURES, LLC

By: 
Name: James E. McCabe, Jr.
Title: Vice President & Treasurer

[Signature page to IP Security Agreement]

TRIUMPH CONTROLS, LLC

By: 

Name: James E. McCabe, Jr.

Title: Vice President & Treasurer

[Signature page to IP Security Agreement]

PATENT
REEL: 050624 FRAME: 0648

TRIUMPH ENGINE CONTROL SYSTEMS, LLC

By: 

Name: James F. McCabe, Jr.

Title: Vice President & Treasurer

[Signature page to IP Security Agreement]

TRIUMPH THERMAL SYSTEMS – MARYLAND, INC.

By: 

Name: James F. McCabe, Jr.

Title: Vice President & Treasurer

[Signature page to IP Security Agreement]


PATENT
REEL: 050624 FRAME: 0650

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed and delivered by their respective officers thereunto duly authorized as of the day and year first above written.

TRIUMPH ACTUATION SYSTEMS - CONNECTICUT, LLC
TRIUMPH AEROSTRUCTURES, LLC
TRIUMPH CONTROLS, LLC
TRIUMPH ENGINE CONTROL SYSTEMS, LLC
TRIUMPH THERMAL SYSTEMS - MARYLAND, INC.

By: _____
Name:
Title:

U.S. BANK, NATIONAL ASSOCIATION as Collateral Agent
for the Secured Parties

By:  _____
Name: George J. Rayzis
Title: Vice President

Schedule A

U.S. Patent Registrations and Applications

Title	Reg. #	Appl. #	Owner
Hold open rod with rotatably mounted pawls as locking members and a snubber	7,654,371	11/155,921	Triumph Actuation Systems - Connecticut, LLC
System and method for aligning aircraft coordinate systems	6,484,381	10/040,203	Triumph Aerostructures, LLC
Method and system for part measurement and verification	6,502,249	09/972,573	Triumph Aerostructures, LLC
Stringer forming device and methods of using the same	10,052,670	14/851,498	Triumph Aerostructures, LLC
Manufacturing system	9,038,265	12/839,950	Triumph Aerostructures, LLC
Manufacturing system	9,254,539	14/691,254	Triumph Aerostructures, LLC
Method and system for defining and verifying a part	6,708,071	09/639,425	Triumph Aerostructures, LLC
Method and system for transforming a CAD model of an object between engineering states	8,983,801	12/428,983	Triumph Aerostructures, LLC
Carbon Fiber Reinforced Thermoplastic Weld Joint And Method For Producing Same		P06713US00 (reference number)	Triumph Aerostructures, LLC
Composite Aerostructure With Integrated Heating Element (prioritized examination)		16393519	Triumph Aerostructures, LLC
Method And Apparatus For Chopping Long Fibers Embedded Within Matrix Resin		P06712IS00 (reference number)	Triumph Aerostructures, LLC
Method And Apparatus For Forming Thermoplastic Low Porosity Composite Laminate		16414737	Triumph Aerostructures, LLC
Thermoplastic Aerostructure With Localized Ply Isolation And Method For Forming Aerostructure (Prioritized Examination)		16402780	Triumph Aerostructures, LLC

Title	Reg. #	Appl. #	Owner
Quick disconnect coupling	6,298,876	09/847,575	Triumph Controls, LLC
Self-centering steering module	6,641,085	10/265,019	Triumph Controls, LLC
Fuel control system for gas turbine engines	7,136,738	10/694,973	Triumph Engine Control Systems, LLC
Control system for positioning compressor inlet guide vanes	6,758,044	10/672,050	Triumph Engine Control Systems, LLC
Flow meter	6,821,093	10/338,332	Triumph Engine Control Systems, LLC
Engine control system	6,986,641	10/614,364	Triumph Engine Control Systems, LLC
Vibration monitoring system for gas turbine engines	7,013,210	10/801,301	Triumph Engine Control Systems, LLC
Vane pump with undervane feed	7,083,394	10/658,558	Triumph Engine Control Systems, LLC
Fuel control system for gas turbine engines	6,715,277	10/140,847	Triumph Engine Control Systems, LLC
Adaptive aero-thermodynamic engine model	7,058,556	09/963,221	Triumph Engine Control Systems, LLC
Centrifugal pump for a gas turbine engine	6,361,270	09/654,598	Triumph Engine Control Systems, LLC
Static cam seal for variable displacement vane pump	6,375,435	09/741,524	Triumph Engine Control Systems, LLC
Manifold drain system for gas turbine	6,442,925	09/653,143	Triumph Engine Control Systems, LLC
Fuel pump for gas turbines	6,474,938	09/836,093	Triumph Engine Control Systems, LLC
Fuel metering unit	6,623,250	09/867,359	Triumph Engine Control Systems, LLC
Vane pump with undervane feed	6,634,865	09/966,715	Triumph Engine Control Systems, LLC
Vane pump wear sensor for predicted failure mode	6,663,357	09/966,132	Triumph Engine Control Systems, LLC

Title	Reg. #	Appl. #	Owner
Selectively adjustable fixed displacement vane pump	6,719,543	10/086,189	Triumph Engine Control Systems, LLC
Control system for positioning compressor inlet guide vanes	6,735,955	09/974,585	Triumph Engine Control Systems, LLC
Vibration monitoring system for gas turbine engines	6,768,938	10/295,528	Triumph Engine Control Systems, LLC
Method of detecting in-range engine sensor faults	6,782,314	10/290,621	Triumph Engine Control Systems, LLC
Fuel metering unit	6,786,702	10/338,550	Triumph Engine Control Systems, LLC
Adaptive acceleration schedules for gas turbine engine control systems	6,820,429	10/295,571	Triumph Engine Control Systems, LLC
Fault management system for gas turbine engines	6,843,060	10/293,130	Triumph Engine Control Systems, LLC
System and method for processing a signal	6,864,808	10/059,622	Triumph Engine Control Systems, LLC
Rotor torque predictor	6,879,885	10/292,046	Triumph Engine Control Systems, LLC
Constant bypass flow controller for a variable displacement pump	6,962,485	10/639,056	Triumph Engine Control Systems, LLC
Multi-mode shutdown system for a fuel metering unit	6,996,969	10/657,828	Triumph Engine Control Systems, LLC
Method of engine surge discrimination	7,376,504	11/001,247	Triumph Engine Control Systems, LLC
High efficiency 2-stage fuel pump and control scheme for gas turbines	7,770,388	11/667,741	Triumph Engine Control Systems, LLC
Balanced variable displacement vane pump with floating face seals and biased vane seals	8,011,909	12/077,663	Triumph Engine Control Systems, LLC
Split discharge vane pump and fluid metering system therefor	8,277,208	12/456,086	Triumph Engine Control Systems, LLC
Ecology system for draining the manifold of a gas turbine engine	8,567,201	13/170,862	Triumph Engine Control Systems, LLC
Thermally efficient multiple stage gear pump	8,596,991	12/931,830	Triumph Engine Control Systems, LLC

Title	Reg. #	Appl. #	Owner
Hybrid bearing	6,241,392	09/489,747	Triumph Engine Control Systems, LLC
Vane pump wear sensor for predicted failure mode	7,207,785	10/715,245	Triumph Engine Control Systems, LLC
Automated Press Cell System And Methods Of Using The Same For Forming Composition Materials		14836211	Triumph Integrated Aircraft Interiors, Inc.
Landing Gear and Pin Locked Indication		62810002	Triumph Integrated Aircraft Interiors, Inc.
Air conditioning apparatus	8,042,354	11/906,015	Triumph Thermal Systems - Maryland, Inc.