

10-19-1998

FORM PTO-1565

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U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

100852052

MR 10-14-98

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof.

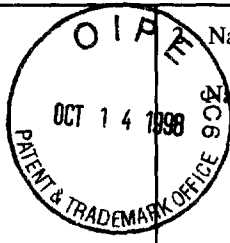
1. Name of conveying party(ies):

THE TITAN CORPORATION
3033 Science Park Road
San Diego, California 92121

Name and address of receiving party(ies):

Name: THE BANK OF NOVA SCOTIA

as Administrative Agent



Internal Address:

Additional names(s) of conveying party(ies) attached? Yes No

3. Nature of conveyance:

- Assignment
- Merger
- Security Agreement
- Change of Name
- Other _____

Street Address: 600 Peachtree Street, Suite 2700

City: Atlanta State: GA ZIP: 30308

Additional name(s) & address(es) attached? Yes No

Execution Date: July 29, 1998

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is: _____

Application Numbers:

See Attached

Registration Numbers:

See Attached

Additional numbers attached? Yes No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Nora A. Whitescarver

Internal Address: Mayer, Brown & Platt

Street Address: 2000 Pennsylvania Ave., NW

Suite 3900

City: Washington State: D.C. ZIP: 20006

6. Total number of applications and patents involved: 30

7. Total fee (37 CFR 3.41): \$1200.00

Enclosed (Check No. 16142)

Authorized to be charged to deposit account

8. Deposit account number:

(Attach duplicate copy of this page if paying by deposit account)

10/19/1998 TTUN11 00000853 4439010

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9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Nora A. Whitescarver
Name of Person Signing

Nora A. Whitescarver
Signature

October 14, 1998
Date

Total number of pages including cover sheet, attachments and documents : 19

PATENT
REEL: 9547 FRAME: 0243

Patent Activity

Name	Inventor(s)	Company	Description	App. Ser. No	Patent No.	Foreign	Notes
				App. Date	Iss. Date		
Apparatus for Combining Optical Images	James L. Doly	The Titan Corporation	An apparatus for combining optical images which is particularly suited for use in integrated circuit lead wire gang bonding system.	06/364,317	4,439,010		Abandoned
Apparatus for sizing particles, droplets or the like with laser scattering	William D. Bachalo	The Titan Corporation	An apparatus for sizing particles, droplets or the like, particularly suited for determining the size of droplets in high number density sprays.	4/1/82	3/27/84		Abandoned
Collection and Management of Pipeline Flow Data	Gene Hubbard Jerry Beauchane Ned Lester	The Titan Corporation	Apparatus and method of monitoring pipeline flow data at the pipeline location and of transmitting accumulated data to a hub location. The transmitting means are turned off most of the time so as to be operated on a low power budget with battery.	06/067,116	4,329,054		
Modem For RF Subscriber Telephone System	Parath, et al.	The Titan Corporation		08/411,504	5,565,862		File 21-63
Portal Imaging With An X-Ray needle In Preparation For Treatment of patient With High-Energy X-Rays	Robert B. Miller	The Titan Corporation		3/28/95	10/15/96		
Power Supply System And Method For Ozone Generator	Harish A. Anamkath	The Titan Corporation	A power supply system for an ozone generator rectifies an AC power supply voltage with a rectifier circuit to provide a DC supply voltage and switches the DC supply voltage with a pair of IGBTs or FETs in such a manner s to provide rectangular duty cycle DC voltage pulses of alternating polarity across the primary coil of a high-voltage step-up transformer that has a secondary coil coupled to the ozone generator to thereby provide high-voltage duty cycle pulses to the ozone generator.	06/713,923	4,644,561		Abandoned
				03/20/85	02/17/87		File 41-61
				08/721,186			Application allowed to lapse.
				9/27/96			File 21-95
				08/637,096			File 21-92
				4/24/96			Abandoned

Patent Activity

Name	Inventor(s)	Company	Description	App. Ser. No.		Foreign	Notes
				App. Date	Iss. Date		
Relp Vocoder Implemented In Digital Signal Processors	Wilson	The Titan Corporation		06/666,446		AUS* DAN EPO JAP NOR	Abandoned
				11/01/84			
System for and Method of Treating Municipal Waste to Produce Fuels	Jack A. Walker Michael L. Doleac	The Titan Corporation	System for treatment of cellulose-containing municipal waste to produce ethanol and other products.	07/971,322			
				1/22/93			

Patent Activity

Name	Inventor(s)	Company	Description	App. Ser. No.		Patent No.		Foreign	Notes
				App. Date	App. No.	Iss. Date	Iss. No.		
Searching for Key Bit-Mapped Image Patterns	William J. McCollough David B. Kelly	The Titan Corporation (Systems)	System for searching for key words and/or key phrases and key symbols in a data memory through recognition patterns	07/854,463 3/19/92		5,361,204 11/1/94			File 21-14

Patent Activity

Name	Inventor(s)	Company	Description	App. Ser. No.	Patent No.	Foreign	Notes
				App. Date	Iss. Date		
Apparatus for and Methods of Detecting Nitrogen in an Object	Robert Bruce Miller	The Titan Corporation (TRT)	Apparatus for methods of detecting the concentration of nitrogen in an object through X-ray interrogation (Exdep).	242,350 9/9/88	4,980,901 12/25/90	GER FR GB SW EPO	Abandoned
Armor Penetrating and Self-Lubricating Projectile	Coleman D. Donaldson	The Titan Corporation (TRT)	Armor-piercing projectile capable of penetrating multiple-layer armor, including ceramic.	83,814 8/11/87	4,823,703 4/25/89		
Ceramic Reactive Armor System	Roger D. Thorpe	The Titan Corporation (TRT)	A reactive armor system utilizing ceramic composite construction.	07/300,644 1/5/89			Allowed, but amendment is pending. Subject is Classified; will not issue until declassified.
Contactless Method and System For Determining Static and Dynamic Characteristics of Target Objects	Jeff Puschell	The Titan Corporation (TRT)	Method of determining the speed, acceleration and profile of a moving target object by processing signals provided by an array of detector elements in response to laser beams reflected from the target object.	08/263,575	5,512,998		File 21-48
High Efficiency High Power Microwave Source	Robert Bruce Miller	The Titan Corporation (TRT)	Apparatus for the timed bunching of electrons in the modulating cavity to further increase the output microwave energy.	561,942 8/1/90	5,101,168 3/31/92		
Improvements in Apparatus for Providing for a Determination of the Movement of an Airborne Vehicle in the Atmosphere	John B. Abbiss Anthony E. Smart Roger P. Woodward	The Titan Corporation (TRT)	System for delivering atmospheric data relating to the movements of an airborne vehicle; improvements in a system included in the airborne vehicle for using energy scattered from aerosol particles in the atmosphere to determine a function of the movement and attitude of the airborne vehicle in the atmosphere; system for use with a laser to regulate the operating temperature of the laser.	286,334 12/19/88	5,046,840 9/10/91		

Patent Activity

Name	Inventor(s)	Company	Description	App. Ser. No.		Foreign	Notes
				App. Date	Iss. Date		
Laser Structure Including Cooling Assembly Interstitial X-Ray Needle	Anthony Smart Roger J. Rickey	The Titan Corporation (TRT)	Improved structure for laser diodes (including cooling assembly).	544,689 6/27/90	5,099,487 3/24/92		
Lightweight Composite Armor	Richard S. Snedeker Ross M. Cortillano Coleman D. Donaldson	The Titan Corporation (TRT)	Method of constructing ceramic composite armor.	06/754,932 10/14/83			Subject is Classified; will not issue until declassified.
Method of Containing Fractured Turbine Blade Fragments	John W. Leech	The Titan Corporation (TRT)	Method of containing fractured turbine engine components with a honeycomb and ceramic structure capable of absorbing energy and sustaining subsonic velocities.	541987 10/14/83	4,547,122 10/15/85		
Modular Armor	Richard S. Snedeker	The Titan Corporation (TRT)	A modular armor made from a plurality of interfitted elements.	802190 11/25/85	4,683,800 8/4/87		
Modulated Radiation Pulse Concept For Impairing Electrical Circuitry	Robert Bruce Miller	The Titan Corporation (TRT)	System for and method of generating photons for introduction to electrical circuitry for impairing the operation of such circuitry	08/381,137 1/31/95	5,608,403 3/4/97		Was Modulated Radiation Pulse Concept In August 1996 Patent Examiner changed name.
Protective Armor and Method of Assembly	Richard S. Snedeker	The Titan Corporation (TRT)	A novel armor construction utilizing ceramic tiles and fabric tapes.	267,826 11/7/88	4,923,728 5/8/90		
Rocket Projectile	Roland Reinhold Franzen	The Titan Corporation (TRT)	Projectiles for providing enhanced penetration of an objective by providing periodic impacts on the object.	07/303,840 1/30/89			Subject is Classified; will not issue until declassified.
System for and Method of Determining the Speed of an Airborne Vehicle	John B. Abbies Anthony E. Smart	The Titan Corporation (TRT)	System for measurement of the speed of an airborne vehicle relative to the surrounding atmosphere based on the scattering of pulses of coherent laser radiation, generated in the airborne vehicle by particles naturally present in the atmosphere at all times.	07/933,226 8/21/92	5,313,263 5/17/94		Abandoned

Patent Activity

Name	Inventor(s)	Company	Description	App. Ser. No. App. Date	Patent No.		Foreign	Notes
					Iss. Date	Iss. Date		
System for and Methods of Providing for a Determination of the Movement of an Airborne Vehicle in the Atmosphere	Anthony E. Smart Roger P. Woodward	The Titan Corporation (TRT)	System for determining atmospheric data relating to the movements of an airborne vehicle; relates to a system included in the airborne vehicle for using energy scattered from aerosol particles in the atmosphere to determine a function of the movement and attitude of the airborne vehicle in the atmosphere.	080,334	4,887,213			
				7/31/87	12/12/89			
System for Measuring Ambient Pressure and Temperature	John B. Abbiss Medhat Azzazy Robert W. McCullough	The Titan Corporation (TRT)	System for determination of air temperature and density in upper atmosphere.	9/1/89	5,055,692			
					10/8/91			
Tunable Narrowband Spectrometer with Acousto-Optical Tunable Filter	Jeff Pusshell	The Titan Corporation (TRT)	Light from a broadband visible and/or infrared light source is collimated and transmitted within an optical path that is open to an ambient environment through a region of interest and is focused to a beam splitter, which splits the transmitted light into different beams and directs the different beams respectively to a pair of narrowband acousto-optical tunable filters (AOTF).	08/134,188	5,438,406			File 21-49
				10/7/93	8/1/95			
Tunable Spectrometer with Acousto-Optical Tunable Filter	Jeff Pusshell	The Titan Corporation (TRT)	By providing a plurality of test signals simultaneously derived from filtered light in different predetermined wavelength ranges the spectrometer provides reliable extended waveband measurements that are not affected by any instability in the light source.	08/281,411	5,444,528	EPO		File 21-74
				7/27/94	8/22/95			

Patent Activity

Name	Inventor(s)	Company	Description	App. Ser. No. App. Date	Patent No. Iss. Date	Foreign	Notes
Article Irradiation System In Which Article-Transporting Conveyor is Closely Encompassed By Shielding Material	J. Thomas Allen, et al.	Titan Scan	An article irradiation system includes a radiation source for scanning a target region with radiation; a first conveyor system for transporting articles from a loading area through the target region to an unloading area; and radiation shielding material defining a tunnel closely encompassing portions of the conveyor system extending away from the target region toward the loading and unloading areas for shielding the loading and unloading areas from radiation derived from the radiation source.	08/854,202 5/9/97			File 21-107
Irradiation System Utilizing Conveyor Transported Article Carriers	Gary M. Pageau	Titan Scan	Irradiation system utilizing a conveyor for transporting articles past a radiation source, such as an electron beam, x-rays and microwaves, for the purpose of sterilizing such articles.	08/033,392 3/19/93	5,396,074 3/7/95	AUS BR CAN EPO JAP PCT MX	File 21-31

PATENT SECURITY AGREEMENT

This PATENT SECURITY AGREEMENT (this "Agreement"), dated as of July 29, 1998, is made between THE TITAN CORPORATION, a Delaware corporation (the "Grantor"), and THE BANK OF NOVA SCOTIA ("Scotiabank"), in its capacity as Administrative Agent (the "Administrative Agent") for each of the Secured Parties;

W I T N E S S E T H :

WHEREAS, pursuant to a Credit Agreement, dated as of July 29, 1998 (as amended, supplemented, amended and restated or otherwise modified from time to time, the "Credit Agreement"), among the Grantor, the various financial institutions as are or may become parties thereto (the "Lenders"), Scotiabank, as Administrative Agent for the Lenders (the "Administrative Agent") and Imperial Bank, as Documentation Agent, the Lenders and the Issuers have extended Commitments to make Credit Extensions to the Grantor;

WHEREAS, in connection with the Credit Agreement, the Grantor has executed and delivered a Borrower Security Agreement, dated as of July 29, 1998 (as amended, supplemented, amended and restated or otherwise modified from time to time, the "Security Agreement");

WHEREAS, as a condition precedent to the making of the Credit Extensions (including the initial Credit Extension) under the Credit Agreement, the Grantor is required to execute and deliver this Security Agreement; and

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

NOW THEREFORE, for good and valuable consideration the receipt of which is hereby acknowledged, and in order to induce the Lenders and the Issuers to make Credit Extensions (including the initial Credit Extension) to the Grantor pursuant to the Credit Agreement, the Grantor agrees, for the benefit of each Secured Party, as follows.

SECTION 1. 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 incorporated by reference) in the Security Agreement.

SECTION 2. Grant of Security Interest. For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, to secure all of the Secured Obligations, the Grantor does hereby mortgage, pledge and hypothecate to the Administrative

Agent, and grant to the Administrative Agent a security interest in, for its benefit and the benefit of each Secured Party, all of the following property (the "Patent Collateral"), whether now owned or hereafter acquired or existing by it:

(a) all letters patent and applications for letters patent throughout the world, including all patent applications in preparation for filing anywhere in the world and including each patent and patent application referred to in Attachment 1 attached hereto;

(b) all reissues, divisions, continuations, continuations-in-part, extensions, renewals and reexaminations of any of the items described in clause (a);

(c) all patent licenses, including each patent license referred to in Attachment 1 attached hereto; and

(d) all proceeds of, and rights associated with, the foregoing (including license royalties and proceeds of infringement suits), the right to sue third parties for past, present or future infringements of any patent or patent application, including any patent or patent application referred to in Attachment 1 attached hereto, and for breach or enforcement of any patent license, including any patent license referred to in Attachment 1 attached hereto, and all rights corresponding thereto throughout the world.

SECTION 3. Security Agreement. This Agreement has been executed and delivered by the Grantor for the purpose of registering the security interest of the Administrative Agent in the Patent Collateral with the United States Patent and Trademark Office and corresponding offices in other countries of the world. The security interest granted hereby has been granted as a supplement to, and not in limitation of, the security interest granted to the Administrative Agent for its benefit and the benefit of each Secured Party under the Security Agreement. The Security Agreement (and all rights and remedies of the Administrative Agent and each Secured Party thereunder) shall remain in full force and effect in accordance with its terms.

SECTION 4. Release of Security Interest. Upon the Termination Date, the Administrative Agent shall, at the Grantor's expense, execute and deliver to the Grantor all instruments and other documents as may be necessary or proper to release the lien on and security interest in the Patent Collateral which has been granted hereunder.

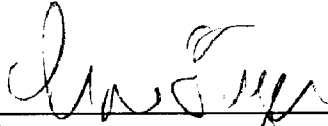
SECTION 5. Acknowledgment. The Grantor does hereby further acknowledge and affirm that the rights and remedies of the Administrative Agent with respect to the security interest in the Patent Collateral granted hereby are more fully set forth in the Security Agreement, the terms and provisions of which (including the remedies provided for therein) are incorporated by reference herein as if fully set forth herein.

SECTION 6. Loan Document, etc. This Agreement is a Loan Document executed pursuant to the Credit Agreement and shall (unless otherwise expressly indicated herein) be construed, administered and applied in accordance with the terms and provisions of the Credit Agreement.


SECTION 7. Counterparts. This Agreement may be executed by the parties hereto in several counterparts, each of which shall be deemed to be an original and all of which shall constitute together but one and the same agreement.

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.

THE TITAN CORPORATION

By 
Name: Iva Fraser
Title: Sr. VP, General Counsel
and Secretary

THE BANK OF NOVA SCOTIA, as
Administrative Agent

By 
Name: Christopher Osborn
Title: Relationship Manager

Patent Activity

Name	Inventor(s)	Company	Description	App. Ser. No.		Patent No.		Foreign	Notes
				App. Date	App. Date	Iss. Date	Iss. Date		
Apparatus for Combining Optical Images	James L. Doty	The Titan Corporation	An apparatus for combining optical images which is particularly suited for use in integrated circuit lead wire gang bonding system.	06/364,317	4/1/82	4,439,010	3/27/84		Abandoned
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Modem For RF Subscriber Telephone System	Paneth, et al.	The Titan Corporation		06/713,923	03/20/85	4,644,561	02/17/87		Abandoned File 41-61
Portal Imaging With An X-Ray needle In Preparation For Treatment of patient With High-Energy X-Rays	Robert B. Miller	The Titan Corporation		08/721,186	9/27/96				Application allowed to lapse. File 21-95
Power Supply System And Method For Ozone Generator	Harish A. Anamkath	The Titan Corporation	A power supply system for an ozone generator rectifies an AC power supply voltage with a rectifier circuit to provide a DC supply voltage and switches the DC supply voltage with a pair of IGBTs or FETs in such a manner s to provide rectangular duty cycle DC voltage pulses of alternating polarity across the primary coil of a high-voltage step-up transformer that has a secondary coil coupled to the ozone generator to thereby provide high-voltage duty cycle pulses to the ozone generator.	08/637,096	4/24/96				File 21-92 Abandoned

Patent Activity

Name	Inventor(s)	Company	Description	App. Ser. No.	Patent No.	Foreign	Notes
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System for and Method of Treating Municipal Waste to Produce Fuels	Jack A. Walker Michael L. Doleac	The Titan Corporation	System for treatment of cellulose-containing municipal waste to produce ethanol and other products.	07/971,322 1/22/93			

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				3/19/92					

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Improvements in Apparatus for Providing for a Determination of the Movement of an Airborne Vehicle in the Atmosphere	John B. Abbiss Anthony E. Smart Roger P. Woodward	The Titan Corporation (TRT)	System for delivering atmospheric data relating to the movements of an airborne vehicle; improvements in a system included in the airborne vehicle for using energy scattered from aerosol particles in the atmosphere to determine a function of the movement and attitude of the airborne vehicle in the atmosphere; system for use with a laser to regulate the operating temperature of the laser.	286,334 12/19/88	5,046,840 9/10/91		

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Modulated Radiation Pulse Concept For Impairing Electrical Circuitry	Robert Bruce Miller	The Titan Corporation (TRT)	System for and method of generating photons for introduction to electrical circuitry for impairing the operation of such circuitry	08/381,137	1/31/95	5,608,403	3/4/97		Was Modulated Radiation Pulse Concept In August 1996 Patent Examiner changed name.
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Rocket Projectile	Roland Reinhold Franzen	The Titan Corporation (TRT)	Projectiles for providing enhanced penetration of an objective by providing periodic impacts on the object.	07/303,840	1/30/89				Subject is Classified; will not issue until declassified.
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Patent Activity

Name	Inventor(s)	Company	Description	App. Ser. No.	Patent No.	Foreign	Notes
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				7/31/87	12/12/89		
System for Measuring Ambient Pressure and Temperature	John B. Abbiss Medhat Azzazy Robert W. McCullough	The Titan Corporation (TRT)	System for determination of air temperature and density in upper atmosphere.		5,055,692		
				9/1/89	10/8/91		
Tunable Narrowband Spectrometer with Acousto-Optical Tunable Filter	Jeff Puschell	The Titan Corporation (TRT)	Light from a broadband visible and/or infrared light source is collimated and transmitted within an optical path that is open to an ambient environment through a region of interest and is focused to a beam splitter, which splits the transmitted light into different beams and directs the different beams respectively to a pair of narrowband acousto-optical tunable filters (AOTF).	08/134,188	5,438,406		File 21-49
				10/7/93	8/1/95		
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				7/27/94	8/22/95		

Patent Activity

Name	Inventor(s)	Company	Description	App. Ser. No App. Date	Patent No.		Foreign	Notes
					Iss. Date			
Article Carrier For Conveyor System	Richard O. Peck Gary M. Pageau Colin B. Williams John T. Allen Bernard G. Wickersham Leonard C. Bisgrove Bruce D. Sellers	Titan Scan	Article Carrier For Conveyor System	366,838 12/30/94	5,590,602 1/7/97			File 21-31-D1
Article Irradiation System In Which Article-Transporting Conveyor is Closely Encompassed By Shielding Material	J. Thomas Allen, et al.	Titan Scan	An article irradiation system includes a radiation source for scanning a target region with radiation; a first conveyor system for transporting articles from a loading area through the target region to an unloading area; and radiation shielding material defining a tunnel closely encompassing portions of the conveyor system extending away from the target region toward the loading and unloading areas for shielding the loading and unloading areas from radiation derived from the radiation source.	08/854,202 5/9/97				File 21-107
Irradiation System Utilizing Conveyor Transported Article Carriers	Gary M. Pageau	Titan Scan	Irradiation system utilizing a conveyor for transporting articles past a radiation source, such as an electron beam, x-rays and microwaves, for the purpose of sterilizing such articles.	08/033,392 3/19/93	5,396,074 3/7/95	AUS BR CAN EPO JAP PCT MX		File 21-31