

03-30-2001



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To the Honorable Commissioner of Patents

101653530

...ed original documents or copy thereof.

1. Name of conveying party:

Communication & Power Industries, Inc.  
(a Delaware corporation)  
607 Hansen Way  
Palo Alto, CA 94304

2. Name and address of receiving party:

Foothill Capital Corporation  
(a California corporation)  
2450 Colorado Avenue  
Suite 3000 West  
Santa Monica, CA 90404

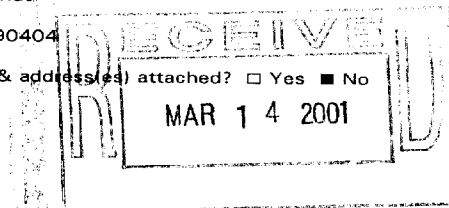
Additional name(s) of conveying party(ies) attached? ☐ Yes ☒ No

3. Nature of conveyance:

- ☐ Assignment ☐ Merger  
☒ Security Agreement ☐ Change of Name  
☐ Other \_\_\_\_\_

WES  
3-14-01

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



Execution Date: December 15, 2000

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:

A. Patent Application No.(s)

09/629,315      09/574,712      09/668,008      09/749,479  
09/199,154      06/251,415      09/259,643      99 28922

B. Patent No.(s)

5,355,093	4,751,437	4,527,094	5,572,092
4,620,170	4,717,067	5,767,625	4,480,210
4,126,489	4,277,718	4,359,666	4,195,745
6,084,353	5,698,949	5,589,736	5,532,462
5,233,269	5,317,233	5,450,047	4,546,325
4,866,343	4,586,009	4,165,473	4,227,116
4,233,539	4,237,402	4,263,528	4,286,240
4,292,567	4,296,354	4,310,603	4,358,704
4,356,430	4,388,555	4,393,332	4,398,121
4,409,518	4,409,519	4,429,269	4,442,417
4,460,846	4,485,349	4,506,190	4,513,223
4,527,091	4,531,103	4,558,256	4,578,620
4,588,965	4,601,331	4,608,520	4,611,149
4,621,219	4,777,406	4,781,640	4,821,165
4,851,788	4,866,344	4,869,420	4,876,687
4,945,464	4,949,011	5,023,768	5,052,193
5,065,109	5,097,231	5,166,965	5,180,944
5,266,414	5,363,016	5,418,070	5,444,327

Additional numbers attached? ☐ Yes ☒ No

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

BERNARD R. GANS, ESQ.  
JEFFER, MANGELS, BUTLER & MARMARO LLP  
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6. Total number of applications and patents involved: [ 80 ]

7. Total fee (37 CFR 3.41).....\$3,200.00

- ☒ Enclosed  
☐ Authorized to be charged to deposit account

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8. Deposit account number: 10-0440

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9. Statement and signature.

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

Bernard R. Gans, Esq.

Bernard R. Gans

March 13, 2001

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## SECURITY INTEREST IN PATENTS

Communications & Power Industries, Inc., a Delaware corporation ("*Grantor*"), with its principal place of business and mailing address at 607 Hansen Way, Palo Alto, California 94304, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, grants to Foothill Capital Corporation, a California corporation, as agent for and representative of (in such capacity herein called "*Secured Party*") the financial institutions party ("*Lenders*") to that certain Loan and Security Agreement among the Grantor, Agent, Lenders and certain other obligors dated as of December 15, 2000 (the "*Loan Agreement*") a continuing security interest in the following property:

(i) Each patent, patent application and right to file a patent application presently owned by or owned in the future by Grantor, including but not limited to those listed on **Schedule A** hereto; and

(ii) All proceeds of the foregoing, including without limitation any claim by Grantor against third parties for damages (to the extent not effectively prohibited by an applicable and legally enforceable license agreement) by reason of past, present or future infringement of any patent now owned or hereafter owned by Grantor, in each case together with the right to sue for and collect said damages:

to secure performance of all Obligations of Grantor under the Loan Agreement and as set out in that certain Intellectual Property Security Agreement dated as of December 15, 2000, by and between Grantor, other obligors and Secured Party (the "*Agreement*").

Grantor does hereby further acknowledge and affirm that the rights and remedies of Secured Party with respect to the security interest in the patents, patent applications and rights to file patent applications made and granted hereby are more fully set forth in the Agreement, the terms and provisions of which are incorporated by reference herein as if fully set forth herein.

All terms defined in the Agreement, whether by reference or otherwise, when used herein, shall have their respective meanings set forth therein, unless the context requires otherwise.

IN WITNESS WHEREOF, Grantor has caused this Security Interest in Patents  
to be duly executed as of December 15, 2000.

**Grantor:**

**COMMUNICATIONS & POWER  
INDUSTRIES, INC.**, a Delaware  
corporation

By: [Signature]  
Name: LYNN E. HARVEY  
Title: SECRETARY AND CEO

**Secured Party:**

**FOOTHILL CAPITAL  
CORPORATION**, a California  
corporation, as Agent

By: [Signature]  
Name: Brian Duffy  
Title: SVP

## Schedule A

### Patents

#### SATCOM

	Description/Title	Country	App./Reg. No.	Filing/Issue Date	Status
1.	Adaptive Heater Voltage Algorithm and Control System for Setting and Maintenance of the Heater Voltage of a Vacuum Electron Device	U.S.	09/629,315	7/31/2000	Pending
2.	Two State Power Converter with Interleaved Buck Regulators	U.S.	09/574,712	5/18/2000	Pending
3.	A Multiple Stage Depressed Collector (MSDC) Klystron Based Amplifier for Ground Based Satellite and Terrestrial Communications	U.S.	09/668,008	9/21/2000	Pending
4.	Gun-Only Magnet Used for a Multi-Stage Depressed Collector Klystron	U.S.	09/749,479	8/28/2000	Pending

#### BMD

	Description/Title	Country	App./Reg. No.	Filing/Issue Date	Status
1.	Compact Microwave and Millimeter Wave Amplifier	U.S.	5,355,093	10/11/1999	Issued
2.	Wide Bandwidth Linear Motor System	U.S.	4751437	6/14/1988	Issued
3.	Wide Bandwidth Linear Motor System	U.K.	239333	8/5/1992	Issued
4.	Altitude Compensation for Frequency Agile Magnetron	U.S.	4,527,094	7/2/1985	Issued
5.	Altitude Compensation for Frequency Agile Magnetron	U.K.	2130003	3/5/1986	Issued
6.	DC Bias & RF Choke Apparatus	U.S.		10/1/1996	Pending
7.	Crossed Field Device	U.S./France	09/259,643	2/26/1999	Pending
8.	Crossed Field Amplifier with Multipactor Suppression	U.S./France	PCT US 99 28922	12/6/1999	Pending

#### EIMAC

	Description/Title	Country	App./Reg. No.	Filing/Issue Date	Status
1.	High Frequency Vacuum Tube with Closely Spaced Cathode and Non-Emissive Grid	U.S.	5,572,092	11/5/1996	Issued
2.	High Frequency Vacuum Tube with Closely Spaced Cathode and Non-Emissive Grid	Canada		06/31/1994	Pending

	Description/Title	Country	App./Reg. No.	Filing/Issue Date	Status
3.	High Frequency Vacuum Tube with Closely Spaced Cathode and Non-Emissive Grid		EPO App. #94303848.9	5/27/1994	Pending
4.	High Frequency Vacuum Tube with Closely Spaced Cathode and Non-Emissive Grid	Japan		6/1/1994	Pending
5.	Means for Liquid Cooling a Microwave Window	U.S.	4,620,170	10/28/1986	Issued
6.	Diffusion Bonded Structure and Method of Making	U.S.	4,717,067	1/5/1986	Issued
7.	Density Modulated Electron Beam Tube with Enhanced Gain	Canada	1,214,272	11/18/1986	Issued
8.	High Frequency Vacuum Tube with Closely Spaced Cathode and Non-Emissive Grid	U.S.	5,767,625	6/16/1998	Issued
9.	Gridded Electron Power Tube	U.S.	4,480,210	10/30/1984	Issued
10.	Gridded Electron Power Tube	Canada	1,204,512	5/13/1986	Issued
11.	Gridded Electron Power Tube	Germany	3,316,609	2/20/1992	Issued
12.	Gridded Electron Power Tube	France	8,307,938	5/6/1992	Issued
13.	Gridded Electron Power Tube	U.K.	2,121,234	5/13/1987	Issued
14.	Gridded Electron Power Tube	Japan	1,855,289	7/7/1994	Issued
15.	Method of Making Cathode Heaters	U.S.	4,126,489	11/21/1978	Issued
16.	Modular Electron Tube with Carbon Grid	U.S.	4,277,718	7/7/1981	Issued
17.	Cylindrical Cathode with Segmented Emissive Surface and Method of Manufacture	U.S.	4,359,666	11/16/1982	Issued
18.	Thermally Sensitive Pressure Release Assembly for Sealed Pressurized Vessel <i>(owned by the Gov't and licensed to Eimac)</i>		4,195,745	4/1/1980	Issued

## MPP

	Description/Title	Country	App./Reg. No.	Filing/Issue Date	Status
1.	<b><i>Klystron/Gyrottron Patents/Applications</i></b> Coaxial Inductive Output Tube U.S.6,084,353/4/2000Issued				
2.	Hollow Beam Electron Tube Having TMoxo Resonators, where X is Greater than 1	U.S.	08/413,034/ 5,698,949	12/16/1997	Issued
3.	Hollow Beam Electron Tube Having TMoxo Resonators, where X is Greater than 1	Japan	08/413,034/ 5,698,949	3/28/1996	Pending
4.	Frequency Multiplier Including Grid Having Plural Segments (88-16 Division)	U.S.	5,589,736	12/31/1996	Issued
5.	An Improved Heating Process for a Chemical Reaction Vessel Employing Microwave Energy	U.S.	5,532,462	7/2/1996	Issued
6.	An Improved Heating Process for a Chemical Reaction Vessel Employing Microwave Energy	Japan	Heisei 7(1995) - 128777	5/1/1995	Pending
7.	An Improved Heating Process for a Chemical Reaction Vessel Employing Microwave Energy	EPO/AB	95302541.8	4/18/1995	Pending

	Description/Title	Country	App./Reg. No.	Filing/Issue Date	Status
8.	An Improved Heating Process for a Chemical Reaction Vessel Employing Microwave Energy	Canada	2,148,010	4/29/1997	Issued
9.	High Power W/G Window & Waveguide Assembly	Japan	Heisei 6(1994) - 251598	9/21/1994	Pending
10.	Anisotropic Pyrolytic Graphite Heaters for Electron Guns	Japan	Heisei 6(1994) - 168588	6/29/1994	Pending
11.	Vacuum Tube w/an Electron Beam that is Current & Velocity Modulated	U.S.	5,233,269	8/3/1993	Issued
12.	Vacuum Tube Including Grid-Cathode Assembly w/Resonant Slow-Wave Structure	U.S.	5,317,233 App. #508442	8/3/1993	Issued
13.	Double Aperture Gridded Electron Gun	U.S.	PENDING	8/1/1985	Pending
14.	WG Load w/Reflecting Struct. for diverting MWs into Absorbing Fluid	Canada	1,222,292	5/26/1987	Issued
15.	Multidiametr Cav. for Reduced Mode Competition in Gyrotron Osc	Canada	1,216,902	1/20/1987	Issued
16.	Electron Tube w/Transverse Cyclotron Interaction	Canada	1,208,365	7/22/1986	Issued
17.	Linear Beam Tube w/Reflected Electron Trap	Canada	1,224,873	7/28/1987	Issued
18.	Uniform Field Solenoid Magnet w/Opening	Canada	1,193,305	9/10/1985	Issued
19.	Adjustable-Beam P-M-Focused Linear Beam MW Tube	Canada	1,213,054	10/21/1986	Issued
20.	Broadband High-Power MW Window Ass'y	Canada	1,178,669	11/27/1984	Issued
21.	Collector-Output for Hollow Beam Electron Tubes	Canada	1,175,144	9/25/1984	Issued
22.	Gyrotron with Improved Stability	Canada	1,170,365	7/3/1984	Issued
23.	Mode Suppression Means for Gyrotron Cavities	Canada	1,178,710	11/27/1984	Issued
24.	Gyrotron Cavity Resonator w/Improved Value of Q	Canada	1,167,161	5/8/1984	Issued
25.	Gyrotron Transverse Energy Equilizer	Canada	1,169,965	6/26/1984	Issued
26.	Method of Fabricating a Dispenser Cathode-DIV.2	Canada	1,159,722	1/3/1984	Issued
27.	Method of Fabricating a Dispenser Cathode-DIV.1	Canada	1,164,522	3/27/1984	Issued
<b>CCTWT Patents/Applications</b>					
28.	Re-Entrant Double-Staggered Ladder Circuit	U.S.	4,866,343	9/12/1989	Issued
29.	Double Staggered Ladder Circuit	U.S.	4,586,009	4/29/1986	Issued
30.	Double Staggered Ladder Circuit	Canada	1,255,793	6/13/1989	Issued
31.	Double Staggered Ladder Circuit	France	211,666	11/7/1990	Issued
32.	Double Staggered Ladder Circuit	U.K.	211,666	11/7/1990	Issued
33.	Double Staggered Ladder Circuit	Germany	3,675,458	11/7/1990	Issued
34.	Double Staggered Ladder Circuit	Japan	2,114,856	1261006	Issued

	Description/Title	Country	App./Reg. No.	Filing/Issue Date	Status
35.	Velocity Tapering of Comb-Quad Traveling Wave Tubes	Canada	1,220,862	4/21/1987	Issued
36.	Slow Wave Circuit for a Traveling Wave Tube	Canada	1,212,769	10/14/1986	Issued
37.	Slow Wave Circuit for a Traveling Wave Tube	U.K.	2,119,163	1/2/1986	Issued
38.	TWT Slow-Wave Structure Assembled from Three Ladder-Like Slabs	Canada	1,180,446	1/2/1985	Issued
39.	TWT Interaction Circuit with Broad Ladder Rungs	Canada	1,180,809	1/3/1985	Issued

## CMP

	Description/Title	Country	App./Reg. No.	Filing/Issue Date	Status
1.	Method and device to calibrate an automatic exposure control device in an x-ray imaging system	U.S.	09/199154	[Not available]	Pending
		Canada	2,254,478	November 24, 1998	Pending

**Cancelled/Expired/Abandoned/Lapsed Patents**

	Description/Title	Country	App./Reg. No.	Filing/Issue Date	Status
1.	Electron tube with dispenser cathode	U.S.	4,165,473	8/21/79	Issued
2.	Zero-bias gridded gun	U.S.	4,227,116	10/7/80	Issued
3.	Electron tube with reduced secondary emission	U.S.	4,233,539	11/11/80	Issued
4.	Slow-wave circuit for traveling-wave tubes	U.S.	4,237,402	12/2/80	Issued
5.	Grid coating for thermionic electron emission suppression	U.S.	4,263,528	4/21/81	Issued
6.	Circular electric mode microwave window	U.S.	4,286,240	8/25/81	Issued
7.	In-band resonant loss in TWT's	U.S.	4,292,567	9/29/81	Issued
8.	Traveling wave tube with frequency variable sever length	U.S.	4,296,354	10/20/81	Issued
9.	Dispenser cathode	U.S.	4,310,603	1/12/82	Issued
10.	Helix traveling wave tubes with reduced gain variation	U.S.	4,358,704	11/9/82	Issued
11.	Gyrottron cavity resonator with an improved value of Q	U.S.	4,356,430	10/26/82	Issued
12.	Gyrottron with improved stability	U.S.	4,388,555	6/14/83	Issued
13.	Gyrottron transverse energy equalizer	U.S.	4,393,332	7/12/83	Issued
14.	Mode suppression means for gyrottron cavities	U.S.	4,398,121	8/9/83	Issued
15.	TWT Interaction circuit with broad ladder rungs	U.S.	4,409,518	10/11/83	Issued
16.	TWT slow-wave structure assembled from three ladder-like slabs	U.S.	4,409,519	10/11/83	Issued
17.	Feed forward AC voltage regulator employing step-up, step-down transformer and analog and digital control circuitry	U.S.	4,429,269	1/31/84	Issued
18.	Uniform filed solenoid magnet with openings	U.S.	4,442,417	4/10/84	Issued
19.	Collector-output for hollow beam electron tube	U.S.	4,460,846	7/17/84	Issued
20.	Stabilized microwave power amplifier system	U.S.	4,485,349	11/27/84	Issued
21.	Linear beam tube with reflected electron trap	U.S.	4,506,190	3/19/85	Issued
22.	Electron tube with transverse cyclotron interaction	U.S.	4,513,223	4/23/85	Issued
23.	Density modulated electron beam tube with enhanced gain	U.S.	4,527,091	7/2/85	Issued
24.	Multidiameter cavity for reduced mode competition in gyrottron oscillator	U.S.	4,531,103	7/23/85	Issued
25.	Velocity tapering of comb-quad traveling-wave tube	U.S.	4,558,256	12/10/85	Issued
26.	Slow wave circuit for a traveling wave tube	U.S.	4,578,620	3/25/86	Issued
27.	Coaxial magnetron using the TE <sub>111</sub> mode	U.S.	4,588,965	5/13/86	Issued
28.	Multiple heat pipes for linear beam tubes having common coolant and vaporizing surface area enhancement	U.S.	4,601,331	7/22/86	Issued



	Description/Title	Country	App./Reg. No.	Filing/Issue Date	Status
29.	Cathode driven crossed-field amplifier	U.S.	4,608,520	8/26/86	Issued
30.	Beam tube with density plus velocity modulation	U.S.	4,611,149	9/9/86	Issued
31.	Electron beam scrambler	U.S.	4,621,219	11/4/86	Issued
32.	High voltage power supply partially adapted for a TWT	U.S.	4,777,406	10/11/88	Issued
33.	Basket electrode shaping	U.S.	4,781,640	11/1/88	Issued
34.	High voltage DC power supply	U.S.	4,821,165	4/11/89	Issued
35.	Mode suppressors for whispering gallery gyrotron	U.S.	4,851,788	7/25/89	Issued
36.	High voltage power supply for a microwave electron tube	U.S.	4,866,344	9/12/89	Issued
37.	Method of diffusion bonding and densifying material of a heater element for an electron beam tube	U.S.	4,869,420	9/26/89	Issued
38.	Short-period electron beam wiggler	U.S.	4,876,687	10/24/89	Issued
39.	High voltage DC power supply	U.S.	4,945,464	7/31/90	Issued
40.	Klystron with reduced length	U.S.	4,949,011	8/14/90	Issued
41.	High voltage high power DC power supply	U.S.	5,023,768	6/11/91	Issued
42.	Beam collector with low electrical leakage	U.S.	5,052,193	6/18/91	Issued
43.	Electropneumatic band selector	U.S.	5,065,109	11/12/91	Issued
44.	Quasi-passive, non-radioactive receiver protector device	U.S.	5,097,231	3/17/92	Issued
45.	High voltage CD source including magnetic flux pole and multiple stacked AC to DC converter stages with planar coils	U.S.	5,166,965	11/24/92	Issued
46.	Gyrotron with a mode converter which reduces EM wave leakage	U.S.	5,180,944	11/19/93	Issued
47.	Solid solution matrix cathode	U.S.	5,266,414	11/30/93	Issued
48.	Cooled reentrant TWT ladder circuit having axially raised cooling bars	U.S.	5,363,016	11/8/94	Issued
49.	Tri-layer impregnated cathode	U.S.	5,418,070	5/23/95	Issued
50.	Anisotropic pyrolytic graphite heater	U.S.	5,444,327	8/22/95	Issued
51.	High power waveguide window and waveguide assembly	U.S.	5,450,047	9/12/95	Issued
52.	Fast-Acting Tuner for Multiple-Channel Klystrons	U.S.	4,546,325	10/8/1985	
53.	MW Reference Cavity w/Rugged Tuning & Temp Compensating Element	U.S.	06/251,415	4/6/1981	
54.	Method and Apparatus for Attenuation of Acoustic Resonance Sidebands in Pyrolytic Graphite Vacuum Tube Structures				Pending
55.	Inductive Output Tube			3/20/1998	Issued