UNITED STATES PATENT AND TRADEMARK OFFICE ———— BEFORE THE PATENT TRIAL AND APPEAL BOARD —————

v.

General Electric Company, Petitioner,

United Technologies Corporation,
Patent Owner

Case No. IPR2016-00952

PETITIONER'S REPLY BRIEF IN SUPPORT OF ITS PETITION FOR *INTER PARTES* REVIEW OF U.S. 9,121,412 (Claims 1-2, 4-5, 7-8, and 11)



TABLE OF CONTENTS

I.	INTE	ODUCTION1	
II.		ES DISCLOSES A FAN TIP SOLIDITY OF 0.74 FOR THE D-023	
	A.	The Tip Solidity of 0.83 Does Not Correspond to the M45SD-024	
	В.	UTC's Argument That the Fan Dimensions in Davies Are Approximations is Baseless	
	C.	Dr. Mathioudakis' Arguments Regarding the Fan Dimensions are Conclusory and Inconsistent with the Prior Art	
III.	CLA	M CONSTRUCTION OF BFPPR9	
IV.	DAV	ES ANTICIPATES THE CLAIMED BFPPR RANGE11	
	A.	UTC Overstates the Pressure Losses in the Bypass Flow Passage	
		1. Dr. Mathioudakis Considered Irrelevant Structures12	
		2. Many Structures in Davies Are Conventional for a Turbofan Engine	
		3. UTC Mischaracterizes the Unconventional Structures in the Bypass Flow Passage	
	B.	The Pressure Losses in the Davies Bypass Flow Passage Would Be No Greater than 7%	
V.	DAVIES RENDERS THE BFPPR RANGES OF CLAIMS 1, 2, AND 4 OBVIOUS		
	A.	Optimizing to a Low FPR Results in a Low BFPPR19	
	B.	A POSITA Would Have Been Motivated to Optimize FPR and BFPPR20	
	C.	UTC has Not Demonstrated Unexpected Results for the Claimed BFPPR Ranges	
	D.	Optimizing the FPR of a Turbofan Engine is Routine24	
VI.	THE	N/R RATIO IN DEPENDENT CLAIM 11 IS OBVIOUS24	



	A.	A POSITA Would Have Been Motivated to Increase Tip Chord Dimension	25
	B.	UTC's Inoperability Argument is Based on a Mischaracterization of Davies	27
VII.		TIONER'S OBVIOUSNESS ANALYSIS CONSIDERED THE ENTION AS A WHOLE	28
VIII	CON	CLUSION	29



TABLE OF EXHIBITS

GE-1001	U.S. Patent No. 9,121,412
GE-1002	Prosecution File History of U.S. Patent No. 9,121,412
GE-1003	Declaration of Reza Abhari Under 37 C.F.R. § 1.68.
GE-1004	Curriculum Vitae of Reza Abhari
GE-1005	D.G.M. Davies, et al., A Variable Pitch Fan for an Ultra Quiet Demonstrator Engine (1976)
GE-1006	614: VFW's Jet Feedliner, Flight International (November 4, 1971)
GE-1007	U.S. Patent No. 7,374,403 to Decker, et al.
GE-1008	NASA SP-7037 (92), A Cumulative Index to the 1977 Issues of Aeronautical Engineering: A Special Bibliography (January 1978) (excerpt)
GE-1009	John W. Schaefer et al., Dynamics of High-Bypass-Engine Thrust Reversal Using A Variable-Pitch Fan (May 1977).
GE-1010	NASA Technical Reports Server Record Details for GE-1016
GE-1011	William S. Willis, Quiet Clean Short-Haul Experimental Engine (QCSEE) Final Report (August 1979).
GE-1012	Bill Sweetman et al., <i>Pratt & Whitney's surprise leap</i> , INTERAVIA (June 1998).
GE-1013	Gerald Brines, <i>The Turbofan of Tomorrow</i> , Mechanical Engineering (August 1990).
GE-1014	Excerpts from Jack D. Mattingly, <i>Elements of Gas Turbine Propulsion</i> (1996).



GE-1015	Bill Gunston, <i>Pratt & Whitney PW8000</i> , Jane's Aero-Engines Issue 7 (March 2000).
GE-1016	Bruce E. Wendus et al., Follow-On Technology Requirement Study for Advanced Subsonic Transport (August 2003).
GE-1017	Richard Whitaker, <i>ALF502: plugging the turbofan gap</i> , Flight International (Jan. 30, 1982).
GE-1018	About NASA Technical Reports Server (www.sti.nasa.gov/find-sti).
GE-1019	University of California at Davis MARC record for Davies
GE-1020	NASA Technical Reports Server Record Details for Schaefer
GE-1021	U.S. 5,141,400 to Murphy et al.
GE-1022	S.A. Savelle et al., Application of Transient and Dynamic Simulations to the U.S. Army T55-L-712 Helicopter Engine (1996).
GE-1023	A Summary of Commonly Used Marc 21 Authority Fields, Library of Congress
GE-1024	U.S. Patent Application No. 2009/0314881 to Sucui et al. (published Dec. 24, 2009).
GE-1025	U.S. Patent No. 3,898,799 to Pollert et al. (1975).
GE-1026	W.K. Lord et al., Flow Control Opportunities in Gas Turbine Engines (2000).
GE-1027	Dale Rauch, Design Study of an Air Pump and Integral Lift Engine ALF-504 Using the Lycoming 502 Core (1972).
GE-1028	U.S. Patent No. 3,820,719 to Clark (1974).
GE-1029	David A. Sagerser et al., Reverse-Thrust Technology for Variable- Pitch Fan Propulsion Systems (1978).
GE-1030	R.M. Denning, Variable Pitch Ducted Fans for STOL Transport Aircraft (1971).



DOCKET

Explore Litigation Insights



Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time** alerts and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.

