

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

FORD MOTOR COMPANY  
Petitioner,

v.

PAICE LLC & ABELL FOUNDATION, INC.  
Patent Owners.

---

U.S. Patent No. 7,455,134 to Severinsky *et al.*  
IPR Case No. IPR2014-00852

---

**DECLARATION OF DR. JEFFREY L. STEIN IN SUPPORT OF  
SECOND PETITION FOR *INTER PARTES* REVIEW UNDER  
35 U.S.C. § 311 *ET SEQ.* AND 37 C.F.R. § 42.100 *ET SEQ.*  
(CLAIMS 1-3, 5, 6, 19, 27, 40 AND 58 OF U.S. PATENT NO. 7,455,134)**

## TABLE OF CONTENTS

I.	INTRODUCTION .....	6
A.	Engagement .....	6
B.	Background and Qualifications .....	6
C.	Compensation and Prior Testimony .....	9
D.	Materials and Information Considered .....	9
II.	RELEVANT LEGAL STANDARDS .....	10
A.	General .....	10
B.	Priority Dates for Claimed Subject Matter .....	11
C.	Claim Construction Standard .....	12
D.	Anticipation .....	13
E.	Obviousness .....	14
III.	THE PERSON OF ORDINARY SKILL IN THE RELEVANT FIELD AND IN THE RELEVANT TIMEFRAME .....	18
IV.	STATE OF THE ART AS OF 1998 .....	20
A.	Engine Fundamentals .....	20
B.	Electric Motor Fundamentals .....	22
C.	HEV Architecture .....	22
1.	Series HEVs .....	24
2.	Parallel HEVs .....	25
3.	Series-Parallel HEVs .....	26
D.	Controls .....	28

E.	Emissions.....	30
F.	Electrical Characteristics.....	42
V.	THE '134 PATENT.....	44
A.	Background of the '134 Patent.....	44
B.	Prosecution History of the '134 Patent.....	49
C.	Construction of Terms in the Challenged Claims.....	50
D.	Priority Claim.....	52
VI.	PATENTABILITY ANALYSIS OF THE CHALLENGED CLAIMS.....	53
A.	Overview of the Prior Art.....	53
1.	U.S. Patent No. 5,586,613 (“Ehsani”).....	53
2.	Yimin Gao <i>et al.</i> , <i>The Energy Flow Management and Battery Energy Capacity Determination for the Drive Train of Electrically Peaking Hybrid Vehicle</i> , SAE Technical Paper 972647 (August 1997) (“Ehsani NPL”).....	54
3.	Oreste Vittone <i>et al.</i> , <i>Fiat Conceptual Approach to Hybrid Cars Design</i> , 12 <sup>th</sup> International Electric Vehicle Symposium (1994) (“Vittone”).....	55
4.	U.S. Patent No. 4,335,429 (“Kawakatsu”).....	55
5.	U.S. Patent No. 5,865,263 (“Yamaguchi”).....	56
B.	Ground 1: The Combination of Ehsani and Ehsani NPL Teaches All the Limitations in Claims 1-3, 5 and 6 of the '134 Patent.....	57
1.	Claim 1.....	57
2.	Claim 2.....	89
3.	Claim 3.....	91
4.	Claim 5.....	94

5.	Claim 6 .....	95
6.	Rationale to Combine Ehsani and Ehsani NPL .....	95
C.	Ground 2: The Combination of Ehsani, Ehsani NPL and Vittone Teaches All the Limitations in Claim 40 of the '134 Patent .....	98
1.	Analysis of Claim 40 .....	98
2.	Rationale to Combine Vittone With Ehsani and Ehsani NPL .....	109
D.	Ground 3: Claim 58 Is Obvious Over Ehsani .....	110
1.	Analysis of Claim 58 .....	110
2.	Rationale .....	127
E.	Ground 4: The Combination of Kawakatsu and Ehsani Teaches All the Limitations in Claims 1-3, 5, 6, 19 and 58 of the '134 Patent .....	128
1.	Claim 1 .....	128
2.	Claim 2 .....	149
3.	Claim 3 .....	150
4.	Claim 5 .....	150
5.	Claim 6 .....	150
6.	Claim 19 .....	151
7.	Claim 58 .....	156
8.	Rationale to Combine Kawakatsu and Ehsani .....	174
F.	Ground 5: The Combination of Kawakatsu, Ehsani and Yamaguchi Teaches the Limitations in Claim 27 .....	176
1.	Analysis of Claim 27 .....	176

2. Rationale to Combine Kawakatsu, Ehsani and Yamaguchi .....	177
G. Non-obviousness factors .....	179
VII. CONCLUSION.....	181
VIII. APPENDICES TO DECLARATION OF DR. JEFFREY L. STEIN.....	182

# 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.