

**UNITED STATES PATENT AND TRADEMARK OFFICE**

---

**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

---

**SYMANTEC CORPORATION**  
**Petitioner**

**v.**

**THE TRUSTEES OF COLUMBIA UNIVERSITY**  
**IN THE CITY OF NEW YORK**  
**Patent Owner**

---

**CASE IPR2015-00375**  
**Patent 8,074,115**

---

**COLUMBIA'S PATENT OWNER RESPONSE**  
**UNDER 37 C.F.R. § 42.108**

***Mail Stop "PATENT BOARD"***  
Patent Trial and Appeal Board  
U.S. Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

## TABLE OF CONTENTS

I.	Introduction.....	1
II.	The Invention Of The '115 Patent.....	2
III.	Level Of Ordinary Skill In The Art.....	4
IV.	The Prior Art.....	6
A.	U.S. Patent Publication No. 2005/0108562 (“Khazan”).....	6
1.	Khazan Describes A Simple List Of Function Calls .....	7
2.	Khazan Only Tracks Win32 DLL Function Calls That Are Capable Of Being Made.....	7
3.	Khazan Identifies A Program As Malicious Code With Absolute Certainty .....	8
B.	U.S. Patent No. 8,108,929 (“Arnold”) .....	8
C.	U.S. Patent No. 5,440,723 (“Agrawal”).....	9
V.	Ground 1: Khazan Does Not Anticipate Claims 22, 25, 27-29, 32, 35-39 or 42.....	10
A.	Khazan Does Not Disclose “Modifying A Program To Include Indicators Of Program-Level Function Calls” .....	10
B.	Khazan Does Not Disclose “Identifying A Function Call As Anomalous”.....	14
1.	Khazan Does Not Disclose “Deviation From A Model of Typical Computer System Usage” .....	14
2.	Khazan Does Not Identify “Deviation From A Model”.....	16
C.	Khazan Does Not Disclose an “Emulator” .....	18
D.	Khazan Does Not Disclose “The Model Reflects Normal Activity” .....	20
E.	Khazan Does Not Disclose “The Model Reflects Attacks” .....	22

F.	Khazan Does Not Disclose A “Model Of Function Calls” .....	23
1.	“Model Of Function Calls” Requires The Model To Be Created Using A Learning Algorithm .....	23
2.	Under Patent Owner’s Construction, Khazan Does Not Disclose A “Model Of Function Calls” .....	27
VI.	Ground 2: Claims 1, 4-8, 11, 14-18, 21, Or 26 Are Not Obvious Under The Combination Of Khazan And Arnold .....	30
A.	The Combination Of Khazan And Arnold Does Not Disclose An “Application Community” .....	30
B.	The Combination Of Khazan And Arnold Does Not Disclose, “Upon Identifying The Anomalous Function Call,” Notifying Any Computer “Of The Anomalous Function Call” .....	33
C.	Khazan And Arnold May Not Be Combined To Render The Claims Obvious .....	35
VII.	Ground 3: Claims 2-3, 9-10, 12-13, 19-20, 23-24, 30-31, 33-34, Or 40-41 Are Not Obvious Under The Combination Of Khazan, Arnold, And Agrawal.....	40
A.	The Combination Of Khazan, Arnold, And Agrawal Does Not Disclose “Randomly Selecting The Model As To Be Used In The Comparison From A Plurality Of Different Models Relating To The Program” .....	40
B.	The Combination Of Khazan, Arnold, And Agrawal Does Not Disclose “Randomly Selecting A Portion Of The Model To Be Used In The Comparison” .....	45
C.	The Combination Of Khazan, Arnold, And Agrawal Does Not Disclose “Creating A Combined Model” .....	46
D.	The Combination Of Khazan, Arnold, And Agrawal Does Not Disclose “Creating A Combined Model From At Least Two Models Created Using Different Computers” .....	48
1.	Agrawal Does Not Disclose The Limitation.....	48

2.	A Combination Of Khazan, Arnold, and Agrawal Would Not Include The Limitation .....	50
E.	The Combination Of Khazan, Arnold, And Agrawal Does Not Disclose “Creating A Combined Model From At Least Two Models Created At Different Times” .....	52
1.	Agrawal Does Not Disclose The Limitation.....	52
2.	A Combination Of Khazan, Arnold, And Agrawal And Arnold Would Not Include The Limitation .....	55
F.	Khazan, Arnold, and Agrawal May Not Be Combined to Render the Challenged Claims Obvious .....	56

## TABLE OF AUTHORITIES

### Cases

<i>Amgen Inc. v. F. Hoffman-La Roche Ltd.</i> , 580 F.3d 1340 (Fed. Cir. 2009) .....	57
<i>Bates v. Coe</i> , 98 U.S. 31 (1878).....	28
<i>Daiichi Sankyo Co. v. Apotex, Inc.</i> , 501 F.3d 1254 (Fed. Cir. 2007) .....	4
<i>Endo Pharms., Inc. v. Depomed, Inc.</i> , IPR2014-00656, Paper 66 (PTAB Sept. 21, 2015) .....	57
<i>In re Am. Acad. Of Sci. Tech Ctr.</i> , 367 F.3d 1359 (Fed. Cir. 2004) .....	26
<i>In re Cuozzo Speed Techs., LLC</i> , 793 F.3d 1268 (Fed. Cir. 2015) .....	26
<i>In re Omeprazole Patent Litig.</i> , 536 F.3d 1361 (Fed. Cir. 2008) .....	22, 50
<i>In re Robertson</i> , 169 F.3d 743 (Fed. Cir. 1999) .....	23
<i>In re Suitco Surface, Inc.</i> , 603 F.3d 1255 (Fed. Cir. 2010) .....	27
<i>InTouch Techs., Inc. v. VGO Communs., Inc.</i> , 751 F.3d 1327 (Fed. Cir. 2014) .....	36
<i>KSR Int'l Co. v. Teleflex Inc.</i> , 550 U.S. 398 (2007).....	35
<i>Microsoft Corp. v. Proxyconn, Inc.</i> , 789 F.3d 1292 (Fed. Cir. 2015) .....	26
<i>NetMoneyIN, Inc. v. VeriSign, Inc.</i> , 545 F.3d 1359 (Fed. Cir. 2008) .....	20

# 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.