

FILING PATENTS ONLINE

A Professional Guide



Sarfaraz K. Niazi

A CRC PRESS BOOK

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Sarfaraz K. Niazi



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Preface

With over a million patents filed every year around the world and the number increasing rapidly, patent offices worldwide have become increasingly burdened with the responsibility of evaluating and awarding patents in a timely manner. The world patent bodies have taken bold steps to develop online filing systems, overcoming the many strategic and logistic problems associated with matters of authentication (validating filer identity), integrity (data were not modified during transmission), nonrepudiation (data have been delivered), and confidentiality (application is read only by authorized entities). The U.S. Patent and Trademark Office was the first to begin accepting patent applications online in 1999, followed by the European Patent Office in 2000; the World Intellectual Property Organization will begin accepting applications in 2003. It is anticipated that other major consortiums and countries will follow suit.

The benefits of online filing of patents include cost savings to patent offices (estimated to be in the billions of dollars) and time saving and thus faster issuance of patents, which will help both the inventor and the consumer. Unfortunately, the necessary complexities involved in preparing and transmitting patent files electronically have produced software programs that are cumbersome, intricate, and difficult to master. This has kept a majority of patent law practitioners and *pro se* inventors from adopting electronic writing and online filing of patents as their method of choice; paper still rules. The reluctance in adopting online filing systems comes not only from perceived uncertainties but also from the attitude of a less Internet-friendly generation that still cannot visualize a paperless system.

The power of the Internet in the development of intellectual property is unquestioned today. Using a desktop computer, one can search the entire world to prove the patentability of an idea; patent examiners now have the same tools and thus anyone who does not fully exploit the value of Internet power faces stiff resistance in securing rights to intellectual property. An issued patent is not above challenge and it is not a seal of approval by the patent office; more such challenges will be forthcoming because of the accessibility of information that can be used to invalidate claims. Therefore, it behooves patent practitioners and inventors to adopt the new cyber tools if they want to stay competitive. Using these tools may not just be good business practice; it may be the only way to file patents in the future.

Filing Patents Online: A Professional Guide is the first comprehensive treatise written to help patent law practitioners and *pro se* inventors write electronically and file patents online to patent offices worldwide. Using a step-by-step approach, it teaches how to harness the unlimited power of the Internet in three important ways: (1) evaluating patentability, (2) writing patent applications electronically (using the software prescribed by worldwide patent offices), and (3) filing patent applications online at a fraction of cost in time and money, compared to what it took just a few

years ago. With over a million patents filed every year worldwide and the number increasing rapidly, patent offices are rapidly switching to electronic management of patents, and it is likely that online filing may be the only way to file patents in the future. Additional help with issues relating to patent law, patentability of inventions, status updates on online filing software, and a discussion group are available at <http://www.eUSPTO.com>. The reader is encouraged to make this Web site the starting point for all patent-related work.

Whereas I have tried to ensure that the information contained in the book is current and verified, mistakes are inevitable, particularly as the state of the art is changing rapidly. I would appreciate any omissions on my part brought to my attention (mail to: niazi@niazi.com) so that corrections can be made in future editions of this book.

I am highly indebted to Rich O'Hanley at Auerbach Publications (a division of CRC Press) for his vision in directing this project, and to Sara Kreisman at CRC Press for her invaluable assistance in the technical writing of the manuscript, and to scores of other friends and associates who critiqued the book and advised on improving the presentation. The patent offices around the world extended extensive help in the writing of this book; I am particularly thankful to USPTO Commissioner for Patents, Nicholas P. Godici; Manuel Desantes of the International Affairs Section at the EPO; and Karl Kalejs, Project Manager, PCT Electronic Filing Unit at WIPO, for directing me to the PCT-SAFE systems to be initiated in 2003. Nevertheless, any mistakes remaining are altogether mine.

Sarfaraz K. Niazi, Ph.D.

Deerfield, Illinois

March 2003

About the Author



Professor Sarfaraz K. Niazi has been teaching for over 30 years at major universities. He has published over 100 refereed research articles, numerous books including textbooks, and hundreds of syndicated articles. He is recipient of many fellowships of learned societies as well as recognition awards from institutions, and a frequent invited speaker worldwide on a variety of topics such as intellectual property, poetry, and American art. He is also an inventor with scores of patents and a licensed agent to practice patent law at the U.S.

Patent and Trademark Office and has several years of experience in filing electronic and online patent applications worldwide.

Acknowledgment

The patent system added the fuel of interest to the fire of genius.

—**Abraham Lincoln**

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To My Always-On Line of Help, Anjum

Table of Contents

Chapter 1

| | |
|---|---|
| The Patent Filing Systems..... | 1 |
| Introduction | 1 |
| A Brief History of the Internet..... | 1 |
| U.S. Laws and Systems | 3 |
| International Patent Laws, Processes, and Systems | 5 |
| The Paris Convention..... | 5 |
| Patent Cooperation Treaty..... | 5 |
| European Patent Convention..... | 7 |
| Online and Electronic Filing Requirements | 8 |

Chapter 2

| | |
|---|----|
| Patent Application Essentials | 11 |
| Introduction | 11 |
| Key Definitions | 13 |
| Misconceptions..... | 13 |
| Introduction to Patent Practice | 15 |
| Purpose of Patent | 15 |
| Laws Governing Patents..... | 15 |
| Important Dates..... | 15 |
| Parts of a Patent | 16 |
| Drawings (35 USC 113) | 16 |
| Specification (35 USC 112) | 16 |
| 112 ¶1 Requirement: Description, Enablement, and Best Mode..... | 17 |
| 112 ¶2 Requirement: Parts of a Claim | 18 |
| Reading a Claim..... | 18 |
| Punctuation of Claim | 18 |
| Definiteness of Claim..... | 18 |
| Narrowing of Claim | 19 |
| Dependent Claims (§112 ¶3–4)..... | 19 |
| Multiple Dependent Claims (§112 ¶5)..... | 19 |
| Dominant–Subservient Claims | 19 |
| Means-Plus-Function Clauses (§112 ¶6)..... | 20 |
| Process Claims | 20 |
| Step-Plus-Function Clauses | 20 |
| Ranges | 21 |
| Negative Limitations | 21 |
| Relative and Exemplary Terminology | 21 |
| Markush Group | 21 |

| | |
|---|----|
| Markush Alternates | 21 |
| Jepson-Type Claims, Improvement Claims | 22 |
| Mixed-Class Claims | 22 |
| Product-by-Process Claims | 22 |
| Novelty and Loss of Right to Patent: §102..... | 22 |
| Date of Invention..... | 22 |
| Status of Invention | 22 |
| Types of §102 Events..... | 23 |
| § 102(a) | 23 |
| § 102(b) | 24 |
| § 102(c) | 25 |
| § 102(d) | 25 |
| § 102(e) | 25 |
| § 102(f) | 27 |
| § 102(g) | 27 |
| § 102 Special Forms | 27 |
| Obviousness/Nonobviousness (§103) | 28 |
| §103(a)..... | 28 |
| Manner of Invention..... | 28 |
| <i>Graham v. John Deere</i> : Fundamental Inquiry | 28 |
| <i>Prima Facie</i> Obviousness | 29 |
| <i>Prima Facie</i> Requirements..... | 29 |
| §102(e), (f), and (g) Events as §103 Prior Art..... | 30 |
| Admission as Prior Art under §103 | 30 |
| Rights and Procedures under the Patent Cooperative Treaty (PCT) | 30 |
| Definitions | 30 |
| Strategies | 31 |
| PCT Process | 31 |
| PCT Application..... | 32 |
| Significant §102(e) Issues | 33 |
| Pre-AIPA (Filed November 29, 2000 or Earlier)..... | 33 |
| Post-AIPA (Filed November 29, 2000 or Later)..... | 33 |

Chapter 3

| | |
|--|----|
| Online Patentability Search | 35 |
| Introduction | 35 |
| Anatomy of a Patent | 36 |
| Patentability Search Online | 39 |
| Patent Office Resources | 39 |
| The U.S. Patent and Trademark Office | 39 |
| Keyword Selection and Searching | 41 |
| Patent Images | 46 |
| Published Application Search | 47 |
| Patent Classification Search | 48 |
| Searching with Classification..... | 54 |
| Patent Classification Example | 56 |

| | |
|--|----|
| Searching the Gazette..... | 57 |
| The European Patent Office..... | 57 |
| The World Intellectual Property Organization | 58 |
| Canadian Patent Office | 58 |
| Internet Search Engines | 70 |
| Technical Databases | 70 |
| Patent Searches and IP Services | 71 |
| Patent Copies and Search Facilities..... | 71 |

Chapter 4

| | |
|---|----|
| Online Filing Basics | 81 |
| Introduction | 81 |
| USPTO | 82 |
| Obtain a Customer Number | 82 |
| Associate Customer Number with Patent Application(s)..... | 82 |
| Request a Digital Certificate | 84 |
| Obtain Access Codes..... | 84 |
| Set Up the Software | 86 |
| WIPO..... | 87 |
| PCT-EASY Registration..... | 88 |
| PCT-EASY Installation | 88 |
| PCT-SAFE..... | 89 |
| EPO | 90 |

Chapter 5

| | |
|---|-----|
| USPTO EFS Overview..... | 91 |
| EFS Purpose..... | 91 |
| EFS Software Overview..... | 92 |
| What EFS Supports..... | 92 |
| What EFS Does Not Support | 93 |
| Basic Steps to Using EFS..... | 93 |
| Getting Started | 93 |
| Word Processing and Imaging Programs..... | 93 |
| File Preparation | 94 |
| Obtain Specification Authoring Tools..... | 95 |
| Obtain Submission Software..... | 95 |
| Obtain PTO Direct Security™..... | 96 |
| Technical Issues | 96 |
| Setup..... | 96 |
| EFS Software on Multiple Computers | 96 |
| Use of EFS Software on a Network..... | 97 |
| File Management..... | 97 |
| Web Browser | 98 |
| Operational Issues | 98 |
| General | 98 |
| Specification Authoring..... | 101 |

| | |
|--|-----|
| Figures, Drawings, Chemical Structures, and Mathematical Equations.... | 106 |
| Additional Application Data | 109 |
| View/Print..... | 110 |
| Transmitting to the USPTO | 111 |
| Receipt of Filing | 115 |
| Fees/Payment..... | 117 |
| Troubleshooting/Errors..... | 118 |

Chapter 6

| | |
|--|-----|
| USPTO EFS Scenarios..... | 121 |
| Introduction | 121 |
| Terminology | 121 |
| Patent Application Publication Process and EFS Submissions..... | 121 |
| New Utility Application..... | 123 |
| The Applicant..... | 123 |
| The USPTO | 123 |
| Preparation for Authoring | 124 |
| Specification | 124 |
| Viewing..... | 124 |
| Submission Folder..... | 125 |
| Submission | 125 |
| Notes..... | 125 |
| EFS Filing Scenario with Compact Disc | 126 |
| The Applicant..... | 126 |
| The USPTO | 127 |
| New Utility Application with Assignment | 128 |
| Provisional Application..... | 128 |
| 18-Month Publication..... | 130 |
| The Applicant..... | 130 |
| The USPTO..... | 130 |
| Voluntary Pre-Grant Publication..... | 132 |
| Amended Publication as First Pre-Grant Publication by the USPTO | 133 |
| Redacted Publication Submission as First Pre-Grant Publication by the USPTO | 134 |
| Redacted Publication Submission after Initial Publication..... | 134 |
| Corrected Publication Due to Error..... | 135 |
| Computer Readable Format Biotechnology Sequence Listing for Pending Paper Application | 135 |
| Filing an Assignment Recordation for a Previously Filed Patent Application Using EFS | 136 |
| Application Data Sheet | 137 |
| Case Study for a New Utility Application | 137 |
| Overview | 137 |
| Background..... | 138 |
| Preparation for Authoring the Patent Application Specification Document..... | 138 |

| | |
|---|-----|
| Authoring the Patent Application Specification Document | 138 |
| Creating Necessary Transmittals and the Cover Sheet | 143 |
| Tracking Down the Application..... | 149 |

Chapter 7

| | |
|--|-----|
| USPTO: PASAT..... | 155 |
| Introduction | 155 |
| Getting Started | 155 |
| Creating New Specifications..... | 156 |
| Importing Specifications | 157 |
| Loading Specifications..... | 157 |
| Interface Features | 158 |
| Menus and Menu Options..... | 158 |
| Toolbars | 158 |
| Shortcut Keys | 159 |
| Office Assistant..... | 160 |
| Status Bar | 160 |
| Disabled Microsoft Word Features | 160 |
| Editing Specifications | 160 |
| Changing Tag and Entity Display..... | 160 |
| Using the Specification Map..... | 161 |
| Managing Selections | 161 |
| Managing Paragraphs..... | 162 |
| Adding Paragraphs | 162 |
| Splitting Paragraphs | 162 |
| Deleting Paragraphs | 162 |
| Renumbering Paragraphs | 162 |
| Managing Claims | 163 |
| Adding Claims | 163 |
| Adding Claim-Text Elements | 163 |
| Indenting Claim-Text Elements | 163 |
| Splitting Claim-Text Elements..... | 163 |
| Deleting Claim-Text Elements..... | 163 |
| Splitting Claims..... | 164 |
| Deleting Claims..... | 164 |
| Renumbering Claims..... | 164 |
| Managing Claim Dependencies | 164 |
| Creating Claim Dependency References | 164 |
| Redefining Reference Targets | 165 |
| Deleting Claim Dependency References | 165 |
| Formatting Text | 165 |
| Copy, Cut, and Paste | 165 |
| Paste Paragraphs..... | 166 |
| Paste Claims | 166 |
| Removing Double Emphasis Tags | 167 |

| | |
|--|-----|
| Nonbreaking Spaces and Hyphens | 167 |
| Smart Quotes, Apostrophes, Fractions, and Double Hyphens | 169 |
| Reversing Operations | 171 |
| Managing Complex Work Units | 171 |
| Converting Equations, Formulae, Symbols, and Tables to TIFF Images..... | 172 |
| Changing the Browser Display Font | 175 |
| Managing Tables | 177 |
| Managing Figures..... | 177 |
| Adding Figures..... | 178 |
| Reordering Figures..... | 179 |
| Removing Figures..... | 179 |
| Managing Special Characters..... | 179 |
| Inserting Custom Characters..... | 179 |
| Replacing Unknown Symbols..... | 180 |
| Deleting Special Characters..... | 180 |
| Entering Biological Deposit Data..... | 180 |
| Spell Check | 180 |
| Spell Check in Real-Time..... | 180 |
| Spell Check in Batch Mode..... | 181 |
| Finding and Replacing Content | 181 |
| Validating and Previewing Specifications | 181 |
| Validate Specification..... | 181 |
| Previewing Specifications | 182 |
| Saving and Exporting Specifications..... | 182 |
| Saving Specifications | 182 |
| Exporting Specifications | 183 |

Chapter 8

| | |
|--|-----|
| USPTO TSA | 185 |
| Introduction | 185 |
| Macro Setup | 185 |
| Template Setup Procedures..... | 186 |
| Overview of WordPerfect XML Template | 187 |
| The Template Environment..... | 187 |
| EFS Toolbars | 188 |
| Keyboard Shortcuts | 188 |
| Overview of EFS Tagging..... | 189 |
| The Display Codes View | 189 |
| Copy and Paste from Text Files | 189 |
| Paste and Tag Paragraphs | 190 |
| Insert Special Characters | 190 |
| Methods of Tagging | 190 |
| Resolving Tagging Errors | 191 |
| Correcting a Text Insertion Error | 191 |

| | |
|--|-----|
| Correcting a Missing Tag Error..... | 191 |
| Correcting an Attribute Error..... | 191 |
| Using Undo to Correct an Error..... | 191 |
| Using Redo to Correct an Error | 192 |
| Authoring a Specification | 192 |
| Create a New Specification..... | 192 |
| Select Specification Sections | 193 |
| Add MPEP Recommended Section | 193 |
| Remove MPEP Recommended Section..... | 193 |
| Create a New Section..... | 193 |
| Title of Invention (Required) | 194 |
| Cross-Reference to Related Applications (Optional) | 194 |
| Continuity Data | 194 |
| Referenced Applications and Patents | 194 |
| Copyright Statement (Optional)..... | 194 |
| Federal Research Statement (Optional)..... | 195 |
| Compact Disc Appendix (Optional) | 195 |
| Background of Invention (Optional)..... | 195 |
| Summary of the Invention (Optional) | 196 |
| Brief Description of the Drawings (Conditional)..... | 196 |
| Brief Description of Sequences (Conditional) | 196 |
| Detailed Description of the Invention (Required)..... | 196 |
| Deposit of Computer Program Listings (Optional)..... | 196 |
| What Is Claimed (Required) | 196 |
| Basic Claim Tagging | 196 |
| Additional Claims | 197 |
| Indented Sections | 197 |
| Dependent Claim Reference | 197 |
| Display Claims | 197 |
| Abstract of the Disclosure (Required)..... | 198 |
| Figures (Optional) | 198 |
| Preparation for Attaching Figures..... | 198 |
| Attaching Figures | 198 |
| Formatting Images | 198 |
| Deleting a Figure | 199 |
| Authoring Wrap-Up | 200 |
| Renumber | 200 |
| Validation | 200 |
| Correcting Validation Errors | 201 |
| Character Mapping Error | 201 |
| Data Not Allowed Error..... | 201 |
| Element Not Allowed at This Point Error..... | 201 |
| Required Element Not Found Error | 201 |
| ID Is Not Unique Error..... | 202 |
| Attribute Source Is Not a Data Entity Error | 202 |
| Viewing the Submission..... | 202 |

| | |
|--|-----|
| Troubleshooting: Images Do Not Display | 202 |
| Changes after Viewing | 203 |
| Commonly Used Elements | 203 |
| <Application-Reference> | 203 |
| <Artwork> | 203 |
| <Chemistry-CWU> | 204 |
| <Copyright> | 204 |
| <Custom-Character> | 204 |
| <Emphasis> | 205 |
| <Heading> | 205 |
| <Lists> and <List-Item> | 205 |
| <Math-CWU> | 206 |
| <Paragraph> | 206 |
| <Patent-Reference> | 207 |
| <Section> | 207 |
| <Subscript> | 207 |
| <Superscript> | 207 |
| <Table> | 207 |
| Troubleshooting | 208 |
| Application Closes before Data Is Saved | 208 |
| WordPerfect-Specific Keyboard Shortcuts Fail | 208 |
| One or Both Toolbars Are Missing | 209 |
| Assistant or Template Menu Is Missing | 209 |
| Online Help | 209 |
| Tooltips | 209 |
| WordPerfect Help | 209 |

Chapter 9

| | |
|--|-----|
| USPTO PatentIn | 211 |
| Introduction | 211 |
| A Sequence Editor | 211 |
| A Sequence Generator | 212 |
| Getting Started: Sequence Screen | 212 |
| Project Menu | 212 |
| Viewing a Work File | 213 |
| Viewing a Sequence Listing | 213 |
| Viewing Error Reports | 213 |
| Rename Sequence | 213 |
| Message Dialog | 214 |
| Project and Applicant Data | 214 |
| Application Steps Menu | 214 |
| Project Data | 214 |
| Prior Application Information | 215 |
| Applicant Data | 216 |
| Sequences | 216 |

| | |
|--|-----|
| Selecting a Standard Organism..... | 217 |
| Searching for a Sequence | 217 |
| Adding a Sequence | 217 |
| Importing a Sequence | 218 |
| Format for Multisequence Data Files to Be Imported | |
| by PatentIn 3.x | 218 |
| Format for Single Sequence Data Files to Be Imported | |
| by PatentIn 3.1 | 219 |
| Importing Sequences from a Project | 220 |
| Importing a 2.1 Project | 220 |
| Copying a Sequence..... | 220 |
| Reordering Sequences..... | 220 |
| Validating Sequences | 220 |
| Saving Sequences..... | 221 |
| Reloading a Saved Project..... | 221 |
| Adding Custom Codons..... | 221 |
| Adding a Custom Organism | 222 |
| Artificial Sequence or Unknown Organism | 222 |
| Feature Data | 223 |
| Sequence Features..... | 223 |
| Feature Key Selection | 224 |
| Additional Information Required for Modified_Base..... | 225 |
| Additional Information on CDS | 225 |
| Further Definition of “n” or “Xaa” | 226 |
| Selecting an Amino Acid | 226 |
| Additional Information for MOD_RES..... | 227 |
| Publication Data..... | 227 |
| Publication Data Screen..... | 227 |
| Journal Publications Information | 228 |
| Databases Publication Information | 229 |
| Patents Publication Information..... | 230 |
| Theses Publication Information | 231 |
| Creating a Sequence Listing Project File..... | 232 |
| Generating a Sequence Listing File..... | 232 |
| Viewing a Sequence Listing File | 232 |
| Copying the Sequence Listing to Disk..... | 233 |
| Checker for Biotechnology Sequence Listing | 234 |
| Checker Main Menu Window..... | 234 |
| Checker Edit File Button | 235 |
| Checker Process File Button..... | 235 |
| Checker View Errors Button..... | 235 |
| Checker View Report Button..... | 235 |
| Checker Help Button | 235 |
| Checker Exit Button..... | 235 |
| Checker Properties Dialog Box | 235 |
| About the Checker Dialog Box | 236 |

| | |
|------------------------|-----|
| List of Acronyms | 236 |
| Error Messages..... | 236 |

Chapter 10

| | |
|---|-----|
| USPTO ePAVE | 239 |
| Overview | 239 |
| Introduction | 240 |
| User Interface..... | 241 |
| Menus | 241 |
| Toolbar..... | 242 |
| Screens..... | 243 |
| General Tab | 243 |
| Filer Tab | 245 |
| Creating a New Filer..... | 247 |
| Changing Filer Data..... | 247 |
| Deleting a Filer | 247 |
| Forms Tab..... | 247 |
| Adding a Form | 248 |
| Removing a Form..... | 249 |
| Completing an Application Data Form..... | 249 |
| Application Details Tab | 249 |
| Inventors Tab | 250 |
| Publication Data-1 Tab | 251 |
| Publication Data-2 Tab | 252 |
| Representative Tab | 253 |
| Continuity Data Tab (Optional) | 254 |
| Foreign Priority Benefit Tab | 254 |
| Plant Information Tab | 254 |
| Fee Transmittal Form Tab..... | 255 |
| Attachments Tab..... | 257 |
| The Embedded Folder..... | 258 |
| Attaching a File..... | 259 |
| Removing a File | 259 |
| Validation Tab | 259 |
| Comments Tab | 260 |
| Submit Tab | 260 |
| Saving Submissions in Progress | 261 |
| Opening a Previously Created Submission | 261 |
| Templates..... | 262 |
| Saving Templates..... | 262 |
| Creating a Template | 262 |
| Using a Template..... | 262 |
| Printing | 262 |
| Printing Data Entry Screens/Submission..... | 262 |
| Viewing and Printing Submission..... | 263 |

| | |
|---|-----|
| Printing Forms..... | 263 |
| Information Disclosure Statement Form | 263 |
| New Application..... | 263 |
| Citing a U.S. Patent on the IDS | 263 |
| Citing a Published U.S. Patent Application on the IDS | 264 |
| Including Remarks in the IDS..... | 264 |
| Completing the IDS Certification..... | 264 |
| Previously Filed Application..... | 266 |
| Assignment Recordation Form | 266 |
| Authoring Multiple Cover sheets..... | 267 |
| Form Validating Required Data Elements | 267 |
| Navigational Controls..... | 267 |
| Assignment Fee Info | 269 |
| Correspondence Data Tab | 269 |
| Conveying Party Data Tab | 270 |
| Receiving Party Data Tab | 270 |
| Subsequent Patent Assignment | 271 |
| Fee Transmittal Form..... | 271 |
| Properties Tab..... | 272 |
| Adding a Property..... | 272 |
| Changing a Property | 272 |
| Deleting a Property | 273 |
| Signature Tab..... | 273 |
| Adding an Attachment | 273 |
| Removing an Attachment..... | 274 |
| Rearranging the Attachments..... | 274 |
| Delivery Method Tab..... | 274 |
| Verifying Cover Sheets | 274 |
| Viewing the Assignment Recordation Form..... | 274 |
| Validation Tab..... | 275 |
| Validating Submission..... | 275 |
| Common Validation Errors | 275 |
| Printing Identified Errors | 275 |
| Validation Override | 276 |
| Comments Tab..... | 276 |
| Submit Tab | 277 |
| Signing Your Submission..... | 277 |
| Sending Your Filing to the USPTO..... | 277 |
| Digital Certificate Profile Log-In..... | 278 |
| Acknowledgment Receipt..... | 278 |
| Filing Large Submissions on Compact Disc..... | 278 |
| Saving Your Submission on CD | 279 |
| Notes to Specific Application Types..... | 280 |
| Provisional..... | 280 |
| New Utility | 280 |
| Publication Data-1 Tab | 280 |

| | |
|------------------------------------|-----|
| Publication Data-2 Tab | 281 |
| Continuity Data Tab | 281 |
| Foreign Priority Benefit Tab | 282 |
| Fee Calculation Tab | 282 |
| Pre-Grant Publication..... | 282 |

Chapter 11

| | |
|-------------------|-----|
| USPTO Direct..... | 285 |
|-------------------|-----|

Chapter 12

| | |
|--|-----|
| WIPO PCT-EASY | 295 |
| Background | 295 |
| Online Filing Overview | 296 |
| Starting PCT-EASY | 297 |
| Creating a New Request Form..... | 297 |
| Templates..... | 297 |
| Right Mouse Button..... | 297 |
| Request Form Notebook Pages..... | 297 |
| Validation Function | 298 |
| Address Book..... | 298 |
| Previewing and Printing a Draft or Duplicate Request Form..... | 298 |
| Saving Forms before Submission | 299 |
| Preparing Requests for Submission | 299 |
| Fee Reduction..... | 299 |
| Filing a PCT Application Using PCT-EASY | 299 |
| PCT-EASY Software..... | 300 |
| Registration..... | 300 |
| PCT-EASY Installation | 301 |
| Creating a PCT International Patent Application | 301 |
| Request | 301 |
| Description, Claims, Abstract, Drawings | 302 |
| PCT-EASY Diskette..... | 303 |
| Nucleotide and Amino Acid Sequences | 303 |
| Language | 303 |
| Filing a PCT International Patent Application | 303 |
| The EASY File Manager | 303 |
| Creating New PCT Forms..... | 304 |
| What Are Categories? | 305 |
| Accessing Categories Functionality..... | 306 |
| Creating and Assigning Categories..... | 306 |
| Disassociating and Deleting Categories | 306 |
| Saved PCT Forms | 307 |
| Templates..... | 307 |
| PCT-EASY Central Outbox | 307 |
| Copying an Application to Diskette | 307 |

| | |
|---|-----|
| Viewing an Application in the Outbox..... | 308 |
| Deleting Forms from the Outbox | 308 |
| Correcting an Error or Omission | 308 |
| EASY Central Stored Forms..... | 308 |
| Viewing an Application in the Stored Forms Folder | 308 |
| Adding International Application Number and Date | 308 |
| Recopying an Application to Diskette..... | 309 |
| Printing Duplicates of the Forms Printed during Submission | 309 |
| Correcting an Error or Omission from an Application | |
| Prepared for Submission or Transmitted | |
| to the Receiving Office | 309 |
| Archiving Forms from the Stored Forms Folder | 309 |
| Deleting Files from the Stored Forms Folder | 309 |
| Address Book..... | 309 |
| Adding an Address to the Address Book | 310 |
| Viewing Address Book Contents | 310 |
| Importing and Exporting Entries | 310 |
| Archiving Files from the EASY Mail Directory, Stored Forms | |
| Folder..... | 311 |
| PCT Fee Maintenance Tables | 312 |
| Reviewing Amounts | 312 |
| Using PCT Fees | 313 |
| Fee Template | 313 |
| Other File Manager Functionality | 314 |
| PCT-EASY Electronic Request Notebook..... | 314 |
| Speed Buttons | 315 |
| PCT-EASY Menu Bar Functions..... | 317 |
| PCT-EASY Master Table Functions..... | 317 |
| Request | 318 |
| States | 320 |
| Names..... | 329 |
| Priority..... | 336 |
| Biology (Indications Relating to Deposited Microorganism | |
| and Other Biological Material)..... | 339 |
| Contents..... | 341 |
| Fees..... | 345 |
| Payment..... | 349 |
| Annotate | 350 |
| Abstract Editor Guidelines..... | 352 |
| Furnishing an Abstract | 352 |
| Filling in the Text of the Abstract from an External Source | 354 |
| Submission Process..... | 354 |
| Preparation for Submission..... | 354 |
| Starting the Submission Process..... | 354 |
| Confirmation..... | 355 |
| Submission Log..... | 355 |

| | |
|--|-----|
| Signature..... | 355 |
| PCT-EASY Generated Request Form and Other Forms..... | 355 |
| Creation and Copying of the PCT-EASY Generated Zip File to Diskette | 357 |
| Copying to Diskette Later..... | 357 |
| Correcting an Error or Omission from an Application Prepared for Submission | 358 |
| Stored Forms | 358 |
| Extended Export/Import Functionality | 359 |
| Data Formats | 360 |
| Easy Forms and Templates Export | 360 |
| User Management | 361 |
| EASY Address Book Export | 363 |
| EASY Forms Import..... | 363 |
| Address Book Import..... | 364 |
| PCT-EASY IFF Functionality..... | 365 |
| Exporting Data to an IFF File | 366 |
| IFF File Structure..... | 367 |

Chapter 13

| | |
|---|-----|
| WIPO PCT SAFE..... | 369 |
| Introduction | 369 |
| Terminology | 369 |
| Summary Standards..... | 370 |
| E-PCT Format and Submission Structure | 373 |
| Types of Files..... | 373 |
| XML | 374 |
| ASCII | 374 |
| PDF..... | 374 |
| Image Formats..... | 375 |
| Tagged Image File Format (TIFF)..... | 375 |
| JPEG File Interchange Format (JFIF) | 375 |
| Submission Structure..... | 376 |
| Electronic Signature | 376 |
| Facsimile Signature..... | 377 |
| Text String Signature | 377 |
| Click-Wrap Signature | 377 |
| Enhanced Electronic Signature..... | 377 |
| Documents Packaging..... | 377 |
| Non-PKI-Based Package..... | 378 |
| PKI Package Types..... | 378 |
| Signed and Encrypted Package (SEP)..... | 378 |
| Transmission | 378 |
| Public Key Infrastructure (PKI)..... | 379 |
| PCT PKI Standards | 380 |

| | |
|--|-----|
| Digital Certificates | 381 |
| Inspection | 383 |
| Communication | 383 |
| Applicant-Office (International Phase) Sector..... | 384 |
| ISA Sends International Search Report (ISR) with Cited | |
| Documents to Applicant..... | 384 |
| RO Receives WASP or SEP..... | 385 |
| RO Validates Certificate and Signature | 385 |
| RO Performs Automated Formalities Examination on Purported | |
| Application | 385 |
| RO Time-Stamps Application | 385 |
| RO Stores Application..... | 386 |
| Offline Transaction Using SEP, WASP, or WAD Packaging | |
| on Physical Media | 386 |
| Applicant Sends Documents to RO | 386 |
| Filing Amendments | 386 |
| Applicant-Office (National Phase) Sector | 387 |
| Office to Office Communication..... | 387 |

Chapter 14

| | |
|--|-----|
| EPO <i>epoline</i> ® | 389 |
| Introduction | 389 |
| Filing Online | 391 |
| Overview | 391 |
| Step 1: Create Patent Application Using <i>epoline</i> Online Filing | 392 |
| Step 2: Add All Required Documents | 392 |
| Step 3: Select “Submit Application” | 392 |
| Step 4: Complete the List of Signatories | 393 |
| Step 5: Check that All Documents Are Added..... | 396 |
| Step 6: Insert Smart Card in the Card Reader | 397 |
| Step 7: Select a User Certificate | 398 |
| Step 8: Enter a PIN Number..... | 399 |
| Step 9: Send Application Online | 399 |
| Step 10: Submission is Completed | 400 |
| Step 11: Receipt Is Returned from the EPO | 401 |
| Resending a Patent Application | 401 |
| Contacting <i>epoline</i> Customer Services..... | 401 |
| Troubleshooting FAQs | 402 |
| PDF Hints and Tips | 405 |
| Fonts in PDF Documents..... | 405 |
| Linking Fonts | 405 |
| Embedding Fonts | 405 |
| Identification of Possible Problem Areas | 407 |
| Which Tool Might Be the Best? | 409 |
| How to Verify that a PDF File Is Self-Contained | 409 |

| | |
|--|-----|
| Paper Size..... | 410 |
| Additional Remarks | 411 |
| Acrobat Upgrades..... | 411 |
| Postscript Printer | 411 |
| Ghostscript and Ghostview | 412 |
| Generating PDF Documents Using a Scanner | 412 |
| Online File Inspection..... | 412 |
| Appendix | |
| Glossary of Common Terms | 415 |
| Index | |
| | 425 |

1 The Patent Filing Systems

INTRODUCTION

For 200 years, millions of inventors have sought to protect their inventions through the American patent system. These patented inventions include Thomas Edison's electric lamp, Alexander Graham Bell's telegraphy, Orville and Wilbur Wright's flying machine, John Deere's steel plow, George Washington Carver's use of legume oils to produce cosmetics and paint, and Edwin Land's Polaroid camera. Today, more than six million patents later, the world is a much better place to live because of inventions that have improved our lives, from the making of Potash (Figure 1.1) to gene therapy.

Inventions alone do not accrue benefits to mankind, however; it is the commercialization of useful products at an affordable price that improves quality of life. Sovereign nations around the world, particularly capitalist societies, ensure protection of inventions by allowing the inventor to reap the profits for a limited time by preventing others from exploiting an invention so that in the long run it can be made competitively available to the public. Awarding patents to inventors accomplishes this goal because the inventor is obliged to disclose fully the gist of his invention in a manner that allows others to reproduce it after the expiry of patent. The commercial potential of inventions drives the world's capitalist systems and thus the race to secure inventions through patents is fast and getting faster, causing patent offices worldwide to creak under the pressure of paperwork. One of the most remarkable inventions of the twentieth century, which was not patented, comes to the rescue of the patenting system: the Internet. Going paperless and filing patents online is the future of intellectual property management, one whose time has arrived. *Filing Patents Online: A Professional Guide* takes the reader to the very far edge of available technology to stay ahead of the revolution taking place in inventing and patenting inventions.

A BRIEF HISTORY OF THE INTERNET

1957: The U.S.S.R. launches Sputnik, the first artificial Earth satellite. In response, the U.S. forms the Advanced Research Projects Agency (ARPA) within the Department of Defense (DoD) to establish U.S. lead in science and technology applicable to the military.

1962: Paul Baran of the RAND Corporation (a government agency) is commissioned by the U.S. Air Force to conduct a study of how it can maintain command and control over its missiles and bombers after a nuclear attack. This is to be a decentralized military research network that can survive a

nuclear strike, so that if locations (cities) in the U.S. are attacked, the military can still control nuclear arms for a counterattack.

- 1968:** The ARPA awards the ARPANET contract to Bolt, Beranek and Newman (BBN). BBN selects a Honeywell minicomputer as the base on which to build the switch. The physical network is constructed in 1969, linking four nodes: the University of California at Los Angeles, Stanford Research Institute, the University of California at Santa Barbara, and the University of Utah. The network is wired together via 50 kbps circuits.
- 1972:** The first e-mail program is created by Ray Tomlinson of BBN. The ARPA is renamed the Defense Advanced Research Projects Agency (DARPA). ARPANET is currently using the Network Control Protocol (NCP) to transfer data. This allows communications between hosts running on the same network.
- 1973:** Development begins on the protocol later to be called TCP/IP; it is developed by a group headed by Vinton Cerf from Stanford and Bob Kahn from DARPA. This new protocol is used to allow diverse computer networks to interconnect and communicate with each other.
- 1984:** ARPANET is divided into two networks: MILNET and ARPANET. MILNET is to serve the needs of the military and ARPANET is to support the advanced research component; the DoD continues to support both networks. Upgrade to CSNET is contracted to MCI. New circuits will be 1.5 Mbps T1 lines, which are 25 times faster than the old 56 kbps lines. IBM will provide advanced routers and Merit will manage the network. The new network is to be called NSFNET (National Science Foundation Network), and old lines continue to be called CSNET.
- 1985:** The National Science Foundation begins deploying its new T1 lines, which will be finished by 1988.
- 1986:** The Internet Engineering Task Force (IETF) is created to serve as a forum for technical coordination by DARPA contractors working on ARPANET, U.S. Defense Data Network (DDN), and the Internet core gateway system.
- 1987:** BITNET and CSNET merge to form the Corporation for Research and Educational Networking (CREN), another work of the National Science Foundation.
- 1988:** Soon after the completion of the T1 NSFNET backbone, traffic increases so quickly that plans are made immediately to begin upgrading the network.
- 1990:** Merit, IBM, and MCI form a not-for-profit corporation called ANS (Advanced Network and Services), which is to conduct research in high-speed networking. It soon comes up with the concept of the T3, a 45-Mbps line. NSF quickly adopts the new network, and by the end of 1991 all of its sites are connected by this new backbone. While the T3 lines are being constructed, the DoD disbands the ARPANET and replaces it with the NSFNET backbone. The original 50-kbps lines of ARPANET are taken out of service. Tim Berners-Lee and CREN in Geneva implement a hypertext

system to provide efficient information access to the members of the international high-energy physics community.

1991: CSNET (which consists of 56-kbps lines) is discontinued after fulfilling its important early role in the provision of academic networking services. A key feature of CREN is that its operational costs are fully met through dues paid by its member organizations. The NSF establishes a new network, named NREN, the National Research and Education Network, the purpose of which is to conduct high-speed networking research. It is not to be used as a commercial network, nor to send much of the data that the Internet now transfers.

1992: The Internet Society is chartered. World Wide Web is released by CREN. NSFNET backbone is upgraded to T3 (44.736 Mbps).

1993: InterNIC is created by NSF to provide specific Internet services: directory and database services (AT&T), registration services (Network Solutions Inc.), and information services (General Atomics/CERFnet). Marc Andreessen, NCSA, and the University of Illinois develop a graphical user interface to the Web, called Mosaic for X.

1994: No major changes are made to the physical network; the most significant thing that happens is the growth. Many new networks are added to the NSF backbone. Hundreds of thousands of new hosts are added to the Internet during this time period. Pizza Hut offers pizza ordering on its Web page. First Virtual, the first cyberbank, opens. ATM (Asynchronous Transmission Mode, 145 Mbps) backbone is installed on NSFNET.

1996: Most Internet traffic is carried by backbones of independent ISPs, including MCI, AT&T, Sprint, UUnet, BBN Planet, ANS, and others. The Internet Society, the group that controls the Internet, is trying to figure out new TCP/IP to enable billions of addresses rather than the current limited system.

January 1999: The World Intellectual Property Organization (WIPO) releases PCT-EASY, a software program to compile (but not file) a patent application electronically.

December 1999: The U.S. Patent and Trademark Office (USPTO) Electronic Filing System (EFS) receives its first electronic filing of a new utility patent application.

July 2002: The European Patent Office (EPO) receives its first electronic filing.

Mid-2003: The WIPO is set to begin accepting online filing of PCT applications, first at the International Bureau and then later in the year at the receiving offices.

U.S. LAWS AND SYSTEMS

In the U.S., the law that governs patents is Title 35 of the United States Code, commonly cited as 35 USC. It incorporates the Patent Cooperation Treaty (PCT, managed by the World Intellectual Property Organization, a UN agency) and changes

made for conformity to the intellectual property provisions of the General Agreement on Tariffs and Trade (GATT). Most industrialized nations have their own patent registration rules, and several treaties provide joint patent protection agreements between various countries, most significantly the European Patent Convention, the Paris Treaty, and the Patent Cooperative Treaty.

There are about one million patent publications filed every year around the world. The filings of U.S. patent applications were projected to increase to 350,000 in FY2002, an increase of over 35% since FY1997. However, USPTO staff resources will not increase at the same rate. Even with planned increases in the number of examiners, manually processing the physical volume of paper represented by this number of applications will tax the agency's ability to store and process applications while maintaining a high level of service to applicants. The USPTO recognizes this problem and has formulated a strategy for implementing an electronic workplace. It is anticipated that within the next 5 years, more than 50% of all patent applications will be filed electronically, eventually converting to a paperless patenting system.

The Twenty-first Century Strategic Plan is the USPTO's road map for creating, over the next five years, an agile and productive organization fully worthy of the unique leadership role the American intellectual property system plays in the global economy. The Plan is predicated on behavioral changes within the USPTO and a willingness to embrace change among all players in the intellectual property system.

—James E. Rogan

*Undersecretary of Commerce for Intellectual Property and Director of the USPTO
before the Subcommittee on Courts, the Internet, and Intellectual Property Committee
of the Judiciary
U.S. House of Representatives, July 18, 2002*

These forward-looking statements amply describe the resolve of the U.S. government in harnessing the power of the Internet to support long-term plans to cope with the paper onslaught at the government level.

The online filing system of the USPTO is called the Electronic Filing System (EFS), and has been operational for more than 2 years; it facilitates users in filing most types of applications with only a few exceptions. Emulating the bold steps taken by the USPTO, the EPO also began accepting applications electronically in mid-2002. The online and fully electronic international application (WIPO's PCT) will be available for filing by mid-2003; currently, the WIPO provides software to write part of the PCT application electronically and then submit it on electronic media, not online. The financial impact of online filing of patents is remarkable; for example, the EPO estimates that a saving of three days of work on each application will net the EPO a savings of over 600 million deutsche marks. The savings at the USPTO will be in billions of dollars, in addition to faster approval of patents, which will be more robust as a result of the improved prosecution process.

The utility of the Internet in making online filing of patent applications worldwide is a reality today that will grow exponentially in the years to come. This book will:

- Help you to understand the requirements for online filing of patents worldwide
- Demonstrate actual examples
- Teach you how you can avoid errors
- Assist you in fully exploiting the power of the Internet in searching for intellectual property evaluation online

The focus of this book is not to advise you on patentability issues, or the art and science of writing patent applications, or the details involved in complying with worldwide legislation on prosecuting patents. You are expected to be familiar with patent laws and well versed in traditional patent-filing modes; however, a summary of patent application essentials is provided in Chapter 2. You will find a much-expanded version of the following discussion at the author's Web site (<http://www.eUSPTO.com>).

INTERNATIONAL PATENT LAWS, PROCESSES, AND SYSTEMS

THE PARIS CONVENTION

One of the oldest patent-related treaties, adhered to by 140 countries including the U.S., is known as the Paris Convention for the Protection of Industrial Property. It provides that each country guarantees to the citizens of the other countries the same rights in patent and trademark matters that it grants to its own citizens. The treaty provides also for the right of priority in the case of patents, trademarks, and industrial designs (design patents). These rights mean that, on the basis of a regular, first application filed in one of the member countries, the applicant may, within a certain period of time, apply for protection in all the other member countries. These later applications then are regarded as if they had been filed on the same day as the first application. Thus, these later applications will have priority over applications for the same invention that may have been filed during the same period of time by other persons. Moreover, these later applications, being based on the first application, will not be invalidated by any acts accomplished in the interval such as, for example, publication or exploitation of the invention, the sale of copies of the design, or use of the trademark. The period of time within which the subsequent applications may be filed in other countries is 12 months in the case of first applications for patents and 6 months in the case of industrial designs and trademarks.

PATENT COOPERATION TREATY

Another treaty, known as the Patent Cooperation Treaty (PCT), was negotiated at a diplomatic conference in Washington, D.C., in June 1970. The treaty came into force on January 24, 1978, and is presently adhered to by over 115 (and growing) countries, including the U.S. The treaty facilitates the filing of applications for patent on the same invention in member countries by providing, among other things, centralized

filing procedures and a standardized application format. The Patent Cooperation Treaty permits an inventor to file what is called a PCT patent application. An international patent application does not, however, lead to an “international patent”; it merely leads to the ability to file patent applications in designated countries over a wider range of permissible times than if no international patent application were filed. Other tangible results of filing an international patent application include a PCT publication, a Search Report from the International Searching Authority, and optionally, a Written Opinion from the International Preliminary Examining Authority (IPEA).

For an applicant who has filed a patent application in a particular country, a PCT application offers a way to postpone having to make decisions about filing patent applications in other countries. If there were no such thing as the Patent Cooperation Treaty, then the only opportunity to postpone making decisions about foreign filing would be the opportunity provided by the Paris Convention. Under the Paris Convention, someone who files an application in one country is forced to make a decision, within one year, as to whether to file patent applications in other countries, which would claim priority from the first application. A PCT application offers a way to extend the time during which a decision must be made about foreign patent filings for a longer period than the decision-postponement period provided by the Paris Convention. By filing a PCT application, the applicant can postpone for 30 months (rather than 12 months under the Paris Convention) the decision about whether to spend the money for foreign patent filings in many countries. In addition, assuming that the first application is filed in a country that has adhered to Chapter II of the Patent Cooperation Treaty, it is possible to perform a step called “demanding preliminary examination,” which entitles the applicant to receive an International Preliminary Examination Report (IPER), which may be helpful in assessing the likelihood of patentability. (In a PCT patent application in which the applicant has demanded Preliminary Examination, the application must be examined by a competent IPEA, generally the USPTO or the EPO. The applicant chooses the particular IPEA that will search the PCT application.)

Another possible advantage of a PCT application is that it proceeds on a fixed timetable. The applicant may be sure of receiving a Search Report from the International Searching Authority no later than 15 months after the priority date of the application. If the applicant demands Preliminary Examination, the IPER will be received no later than 26 months after the priority date of the application. An ordinary U.S. patent application, depending on the backlog in the examining group handling the application, can sometimes go for more than 2 years before a first Office Action is received. The PCT applicant can thus get faster feedback from a patent office.

There are instances where a PCT filing may not be advisable. For example, not everyone knows for sure at the time of the first patent filing which, if any, foreign countries should have patent applications filed. After a year or two, the inventor may have more information about whether to do foreign filings, and the invention may prove to have great commercial potential in some foreign countries and not others. In particular, the inventor who benefits from having filed a PCT application is the one who discovers between 12 and 30 months after the filing date that it is no longer desirable to perform foreign filing. In this case, when the decision is made to drop

the foreign filings the inventor will have saved all the money that would have been spent on those filings.

The laws of many countries differ in various respects from the patent law of the U.S. In most foreign countries, publication of the invention before the date of the application will bar the right to a patent. Maintenance fees may be required, and there may be a requirement to manufacture the patented invention in a particular country after a certain period, usually 3 years. If there is no manufacture within this period, the patent may be void in some countries, although in most countries the patent may be subject to the grant of compulsory licenses to any person who may apply for a license.

There are several mutual treaties between countries and the costs of filing international applications can be prohibitive. Recent changes in laws allow you to “buy” a 30-month window to decide if you should file an application; unfortunately, you have only 12 months (or before the issuance of patent, whichever is earlier) to buy this protection. Because the rights granted by a U.S. patent extend only throughout the territory of the U.S. and have no effect in a foreign country, an inventor who wants patent protection in other countries must apply for a patent in each of the other countries or in regional patent offices. Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in accordance with the requirements of that country.

EUROPEAN PATENT CONVENTION

The European Patent Convention (EPC) has given rise to the European Patent Office (EPO), which grants European patents for the contracting states to the EPC signed in Munich, October 5, 1973, and entered into force October 7, 1977. It is the executive arm of the EPO, an intergovernmental body set up under the EPC, whose members are the EPC contracting states. The organization’s administrative council, composed of delegates from the contracting states, supervises the activities of the EPO. The EPO offers a way to file a single patent application, which can lead to patent coverage in all the European countries that belong to the EPC. While the EPO has its historical origins in the European Union (EU), it is interesting to note that its formalities can lead to patent coverage in countries that do not belong to the EU. For example, as this book is being written Switzerland is not a member of the EU, and yet it is possible to secure Swiss patent protection through the EPC and the EPO.

The countries that belong to the EPO include Austria, Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Liechtenstein, Luxembourg, Monaco, The Netherlands, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

For an inventor, the main decision that has to be made is whether to file directly with the country or countries in Europe in which patents are desired, or to do a single filing with the EPO. As a first approximation, if it is only desired to get patent coverage in one or two countries of Europe, it may be more economical to file directly with the patent offices in those countries. On the other hand, if the number of countries of Europe in which patent protection is desired is greater than just one or two, then it probably would be economical to file directly with the EPO.

ONLINE AND ELECTRONIC FILING REQUIREMENTS

There are three types of patent application preparations: (1) paper; (2) electronic, which means preparing the application for transmission on media, such as is currently done for PCT filings and an option for U.S. filings; and (3) electronic/online, which means preparing an electronic application and transmitting it directly to the patent office either through a proprietary network setup or through the Internet.

The patent applications can be filed online to the USPTO and soon to the WIPO for PCT (mid-2003). It is inevitable that online filing of patents will replace paper filing as the increasing load of paper handling becomes unmanageable; the Internet is ideally suited to accomplish this.

The main concerns of online patent filing relate to authentication of the filer, assurance of perfect transmission, and confidentiality of data submitted; these issues have been resolved through digital signature and the use of cryptographic software. The USPTO has taken the lead and has developed one of the most comprehensive and debugged systems. Recently, the USPTO has awarded contracts to private organizations to develop and offer online filing software compatible with its requirements; the intent is to simplify and streamline online filing and to privatize the domain of technology involved in online filing of patents. The EPO has developed its own specifications, having chosen a format different than the U.S. system, and the WIPO has yet to offer online filing although it does offer electronic preparation of applications.

Throughout this book, a detailed description of the use of proprietary software is described and whereas the hardware requirements are spelled out in the instructions that accompany the software, it is assumed that the user has at least a Pentium II PC with 128 Mb RAM and a hard drive of sufficient capacity. Whereas any Internet connection will suffice, it is noted that slow connections such as 56k modems often prove problematic if the transmission is interrupted, creating havoc in the transferred record. The use of DSL or ADSL connection is therefore advised; higher-speed connections are preferred. It is advisable also to back up the data, particularly the electronic keys that are created to authenticate the signatures. Whereas European system authentication is hardware based, the U.S. system now and the WIPO system in the future will rely on software with extremely sensitive codes requiring great precaution in password entry. It is further recommended that filers develop a backup for all systems involved in online filing of patents. Further caution is directed to legal requirements in the use of software; for example, it is illegal to download the USPTO software prior to the registration process, although there is no filter to check it.

In addition to providing details on filing patents online, this book details also the techniques of online search for patentability, a function highly critical to patent law practitioners which requires fast Internet connection to enhance efficiency of search time. A large number of URLs are listed in the book and were tested before the book went to press; however, there is a possibility that some addresses may have changed. If an error message results from entering a URL, first make sure that you have entered the address correctly (the most common error); one way to ensure a correct URL address is through the links at <http://www.eUSPTO.com>. At this Web site also you will find many features and resources such as a searchable MPEP

(*Manual of Patent Examining Procedure, 8th Edition*), an updated listing of online search resources, forms required for registering to file online, computer software that is allowed to be distributed (freeware), and a discussion group to resolve problems you might face in online filing of patents.



The United States.

To all to whom these Presents shall come, Greeting.

X000001
July 31, 1790

Whereas Samuel Hopkins of the City of Philadelphia and State of Pennsylvania hath discovered an Improvement, not known or used before, such Discovery, in the making of Pot ash and Pearl ash, by a new Apparatus and Process; that is to say, in the making of Pearl ash, 1st by burning the new Ashes in a Furnace, 2^d by digesting and boiling them when so burnt in Water, 3^d by drawing off and setting the ley and 4th by boiling the ley into Salts which then are the true Pearl ash; and also in the making of Pot ash, by placing the Pearl ash so made as aforesaid, which Operation of burning the raw Ashes in a Furnace, preparatory to their Digestion and boiling in Water, is new, leaves little Residuum; and produces a much greater Quantity of Salt: These are therefore in pursuance of the Act, entitled "An Act to promote the Progress of useful Arts", to grant to the said Samuel Hopkins, his Heirs, Administrators and Assigns, for the Term of fourteen Years, the sole and exclusive Right and Privilege of using and vending to others the said Discovery, of burning the raw Ashes previous to their being digested and boiled in Water, according to the true Manner and Manner of the Act aforesaid. And Testimony whereof I have caused these Letters to be made patent, and the Seal of the United States to be hereunto affixed Given under my Hand at the City of New York this thirty first Day of July in the Year of our Lord one thousand seven hundred and Ninety.

G. Washington

City of New York July 31st 1790.

I do hereby certify that the foregoing Letters patent were delivered to me in pursuance of the Act entitled "An Act to promote the Progress of useful Arts"; that I have examined the same, and find them conformable to the said Act.

Edm: Randolph Attorney General for the United States.

FIGURE 1.1 The first U.S. Patent signed by President George Washington.

2 Patent Application Essentials

INTRODUCTION

Whereas the focus of this book is electronic preparation and filing of patent applications, the choice of various application filing modules depends greatly on the type and scope of the patent application. This chapter summarizes patentability requirements as a primer to the field of patenting and in determining the essential features of an application, particularly in the U.S. Abbreviated definitions are provided with the assumption that the reader is well versed in the field of patent law. Further details and explanations of these laws and rules are available through the U.S. Patent and Trademark Office at <http://www.uspto.gov>.

A patent for an invention is the grant of a property right to the inventor issued by the USPTO or by other patent offices around the world. The term of a new U.S. patent is 20 years from the date on which the application for the patent was filed or, in special cases, from the date an earlier related application was filed, subject to the payment of maintenance fees. U.S. patent grants are effective only within the U.S., its territories, and its possessions.

The right conferred by the patent grant is, in the language of the statute and of the grant itself, “the right to exclude others from making, using, offering for sale, or selling” the invention in the U.S., or “importing” the invention to the U.S. What is granted is not the right to make, use, offer for sale, sell, or import, but the right to exclude others from doing so. Similar to a real property, patent deeds can be assigned or sold.

In the U.S., the inventor must file the patent either on his own or through a patent agent or patent attorney licensed by the USPTO. Patent applications can be filed on behalf of the dead or the mentally insane as well. Just about anything under the sun can be patented as long as it is useful and does not claim to defy the laws of nature or is itself not a law of nature or an abstract thought.

Patent law specifies the general field of subject matter that can be patented and the conditions under which a patent may be obtained. In the language of the statute, any person who “invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent,” subject to the conditions and requirements of the law.

- The term *process* is defined by law as a process, act, or method, and primarily includes industrial or technical processes.
- The term *machine*, as used in the statute, needs no explanation.

- The term *manufacture* refers to articles that are made, and includes all manufactured articles.
- The term *composition of matter* relates to chemical compositions, and may include mixtures of ingredients as well as new chemical compounds.

These classes of subject matter taken together include practically everything that is made by man and the processes for making the products. The Atomic Energy Act of 1954 excludes the patenting of inventions useful solely in the utilization of special nuclear material or energy for atomic weapons.

Patent law specifies that the subject matter must be “useful.” The term *useful* in this connection refers to the condition that the subject matter has a useful purpose, and also includes operativeness, i.e., a machine that does not operate to perform the intended purpose would not be considered useful, and therefore would not be granted a patent.

Interpretations of the statute by the courts have defined the limits of the field of subject matter that can be patented, thus it has been held that the laws of nature, physical phenomena, and abstract ideas are not patentable subject matter. A patent cannot be obtained on a mere idea or suggestion; the patent is granted on the new machine, manufacture, etc., as has been said, and not on the idea or suggestion of the new machine. A complete description is required of the actual machine or other subject matter for which a patent is sought.

Ordinarily, there is nothing that prohibits a patentee from making, using, offering for sale, selling, or importing his own invention, unless he thereby infringes the prior, in-force rights of others. For example, a patent for an improvement of an original device already patented would be subject to the patent on the device.

A patentee may not violate the federal antitrust laws, such as by resale price agreements or entering into combination in restraints of trade.

According to the law in the U.S., only the inventor may apply for a patent, with certain exceptions. If a person who is not the inventor applies, the patent (if obtained) is invalid. The person applying in such a case who falsely states that he is the inventor would be subject to criminal penalties. If the inventor is dead, legal representatives, i.e., the administrator or executor of the estate, may make the application. If the inventor is insane, a guardian may make the application for patent. If an inventor refuses to apply for a patent or cannot be found, a joint inventor or a person having a proprietary interest in the invention (if there is no joint inventor available) may apply on behalf of the nonsigning inventor. If two or more persons make an invention jointly, they apply for a patent as joint inventors. A person who makes only a financial contribution is not a joint inventor and cannot be joined in the application as an inventor. It is possible to correct an innocent mistake in erroneously omitting an inventor or in erroneously naming a person as an inventor. Officers and employees of the USPTO are prohibited by law from applying for a patent or acquiring, directly or indirectly, except by inheritance or bequest, any patent or any right or interest in any patent. Unlike U.S. patent laws, foreign countries allow patent filing by assignees or corporations.

Under U.S. law it is necessary, in the case of inventions made in the U.S., to obtain a license from the Director of the USPTO before applying for a patent in a

foreign country. The license is required if the foreign application is to be filed before an application is filed or within 6 months after filing an application in the U.S. unless a filing receipt with a license grant was issued earlier. The filing of an application for patent constitutes the request for a license and the granting or denial of such request is indicated in the filing receipt mailed to each applicant. After 6 months from the U.S. filing, a license is not required unless the invention has been ordered to be kept secret; if such is the case, the consent to the filing abroad must be obtained from the Director of the USPTO during the period the order of secrecy is in effect.

KEY DEFINITIONS

The terminology of patenting language is presented in the Glossary. Following are some common terms used frequently throughout this book:

Design: The emphasis of this type of patent is on the design of the invention, not on its functionality. The important aspect of this type of patent is the invention's unique ornamental and aesthetic properties.

Invention: An invention is the conception of a new and useful article, machine, composition, or process.

Patent: Right of ownership granted by the government that gives the owner the right to exclude others from making, selling, or using the claimed invention.

Patent application: A document submitted to a patent office with the aim of obtaining a patent on an invention. The patent application describes an invention in detail.

Plant: This type of patent includes new varieties of asexually reproduced plants.

Prior art: Knowledge that is in existence or publicly available before the date of an invention or more than one year prior to the first patent application date.

Reduction to practice: An in-depth description of how the invention works, described in concrete terms.

Utility: This is the most common type of patent. It includes inventions that operate in a new and useful manner.

MISCONCEPTIONS

The patenting of inventions is a complex process that historically has been confusing, particularly for inventors who may not be practitioners of patent law. For example:

- Patents are valuable only if they can be used to protect a profit stream by excluding others from making, using, or selling whatever is covered by the patent's claims.
- A patent does not mean that the invention works as verified by the government; it is left for the licensors to evaluate; it is suspected that as

many as 10% of all issued patents are invalid for being nonfunctional as claimed.

- You cannot get a provisional patent. You can file a Provisional Patent Application for a small fee that allows you 12 months to file a regular application while protecting your priority. A Provisional Application is not simply “describing the idea”; it is a complete application without the required claim(s). You may not change anything in the body of the application when you file the regular application if you want to take priority advantage.
- You cannot get a patent for an idea or a mere suggestion. Patents are granted to people who (claim to) “invent or discover any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof,” to quote the essence of the U.S. statute governing patents. Complete and enabling disclosure also is required.
- A patent can be enforceable from the time it is issued until it expires, not necessarily a 20-year term. New rules provide some guarantee that the enforceable term of a utility patent will be at least 17 years and that some royalties may be collectable when a patent is published before it issues. Design patents are good only for 14 years and cover only the ornamental appearance of the item, not its structure or functionality.
- A patent right is exclusory only. A patent does not give the owner the exclusive right to make, use, or sell an invention; it gives its owner the right to exclude others from making, using, or selling exactly what is covered by the patent claims. A holder of a prior patent with broader claims may prevent the inventor whose patent has narrower claims from using the inventor’s own patent.
- A U.S. patent is enforceable only in the U.S. It can be used to stop others from importing into the U.S. what the patent covers, but people in other countries are free to make, use, and sell the invention anywhere else in the world that the inventor does not have a patent. This is the reason one must consider filing a PCT application and following it up with either individual state filings or a consortium filing such as the European Patent Office (EPO).
- A patent does not protect an invention because only a patent in conjunction with a legal opinion of infringement will give the owner(s) of the patent the right to sue in a civil case against the alleged infringer. The U.S. government does not enforce patents (however, the Customs Service can help block infringing imports), and infringement of a patent is not a crime. The responsibility and expense of enforcing the rights granted by a patent (and securing Customs Service help) lie with the patent owner(s).
- Filing for a patent is not the only way to protect an invention. When properly used, the USPTO Disclosure Document Program (\$10), Nondisclosure Agreements (free), and Provisional Applications for Patent (\$80), along with maintaining good records and diligent pursuit, can keep your patenting rights intact until you file for a patent.

- A patent attorney or agent is not needed to file your patent; an inventor may choose to file *pro se* (on his own). However, given the complexity of the law, advice from professionals often proves invaluable.

INTRODUCTION TO PATENT PRACTICE

PURPOSE OF PATENT

The purpose of the patent is to award the patentee with the right in the U.S. to exclude others from making, using, selling, offering to sell, or importing the patented invention. A patent is not a right to practice an invention. Society benefits after patent expiry, allowing for improvement of the invention and designing around the claims.

LAWS GOVERNING PATENTS

The U.S. Constitution gives Congress the power to enact laws relating to patents in Article I, section 8, which reads: “Congress shall have power ... to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.” Under this power Congress has from time to time enacted various laws relating to patents. The first patent law was enacted in 1790. The patent laws underwent a general revision which was enacted July 19, 1952, and which came into effect January 1, 1953. It is codified in Title 35, United States Code. Additionally, on November 29, 1999, Congress enacted the American Inventors Protection Act of 1999 (AIPA), which further revised the patent laws. The Constitution establishes the laws 35 USC contains; 37 CFR (Code of Federal Regulations) contains the rules; MPEP (*Manual of Patent Examining Procedure*) governs the applications of law; modifications and treaties modify the regulations and applications of law continuously; case law defines the limits of legal definition.

IMPORTANT DATES

1. *December 8, 1993/January 1, 1996*: Dates that may be relied on to establish a date of invention (by an applicant or patentee) in NAFTA (North American Free Trade Agreement) and WTO (World Trade Organization) countries, respectively; dates claimed prior to these dates are shifted down to these dates.
2. *June 8, 1995*: Provisional application allowed; 20-year term from filing date forward of this date.
3. *November 29, 1999*: 12 months to convert provisional to nonprovisional even if provisional is abandoned. If provisional application’s anniversary falls on holiday or weekend, the due date for filing claimed nonprovisional application is moved to the following business day; all of it is effective retroactive to June 8, 1995. 35 USC 103 was amended to add a safe haven for 102(e)/103(f) and (g) events when common assignee is the beneficiary. 102(g) amended (added section 1): dates of invention permitted to

constitute as prior art only when established in an interference in PTO or in U.S. District Court.

4. *May 29, 2000*: RCE (Request for Continued Examination) may be filed on an application for which prosecution is closed (that is not a continuing application) if filed on and after June 8, 1995; CPA (Continued Prosecution Application) may not be validly filed on and after May 29, 2000 except for designs and patent applications filed before May 29, 2000 (if filed, it will be treated as RCE); patent term guarantee (response times, issuance period, total time pending) 14–4–4–36 month obligations of PTO with offsets for dilatory applicant prosecution.
5. *November 29, 2000*: Preissuance publication of application 18 months postfiling, which publications become prior art as of the application filing date (not the publication date).
6. *April 2, 2002*: Time to enter national stage after Chapter I filing extended to 30 months; no change in Chapter II filing deadlines; applicable to Chapter I filings due for 20-month Chapter II filing after April 2, 2002.

PARTS OF A PATENT

DRAWINGS (35 USC 113)

- Drawings are required when necessary, most likely in mechanical or electrical and some chemical applications
- Drawings must show all of the claimed elements
- Filing date is not assigned if drawings are not provided at the OIPE (Office of Initial Patent Examination) level of evaluation
- Examiner may require drawings but filing date is not affected
- Drawings may be added later by amendment if already described in the specification or claim as originally filed
- No need for manufacturing drawings (such as tolerances or in-process controls)

SPECIFICATION (35 USC 112)

The written description, the manner and process of making and using should be in such full, clear, concise, and exact terms as to enable any person skilled (with ordinary skills) in the art to which it pertains, or with which it is most nearly connected, to make and use the invention and setting forth the best mode contemplated by the inventor for carrying out the invention. There are three requirements: description, enablement, and best mode.

1. Description
 - Must describe what is claimed clearly
 - Focus is on the claimed invention only

- Scope commensurate with scope of claim(s); disclosure of a single species may or may not support a generic claim
 - Critical or essential element must be recited in claim(s)
 - The vantage point is one of ordinary skill in the art
 - The inventor may be his own lexicographer; spell out but not befuddle, not use in a manner contrary to what is commonly acceptable
 - Theory need not be set forth; if theory is wrong, the error is not fatal (unless theory is claimed invention)
 - Manner of invention (how the invention was made) is not important
2. Enablement
- A person of ordinary skills can make and use
 - Without undue experimentation
 - Not necessarily for commercial production
 - This requirement is different than §101 requirement of being useful
 - Claim not reciting the essential matter may be rejected for lack of enablement; failing to claim the subject matter that the applicant regards as the invention
 - Publications after filing date may be used to defeat enablement (such as by examiner)
 - Scope of enablement must be commensurate with scope of claim(s)
 - Amount of disclosure required depends on the state of the art and predictability; the more that is known and the greater the predictability, the less disclosure is required
3. Best mode
- What inventor considers best mode may not be what anyone else considers best and not what is best objectively
 - At the time application is filed; need not and cannot be updated by amendment (as it will be considered new matter) even in a division or continuation, but can be updated in CIP (Continuation-in-Part) if it pertains to a new claim made
 - Must be disclosed although not necessarily identified as such; embodiment disclosed is automatically considered as the best mode; several embodiments may be disclosed without identifying which one is the best

112 ¶1 REQUIREMENT: DESCRIPTION, ENABLEMENT, AND BEST MODE

Description, enablement, and best mode for each claim as filed or else claim is rendered invalid if contested. Mythical person is one of ordinary skills in the art, not a layperson. Need to disclose what is considered as required knowledge of one of ordinary skill. Any one or more of these specific portions of an application can satisfy each of these three requirements: specification, drawing(s), and claims as originally filed. Unclaimed inventions need not satisfy this requirement.

112 ¶2 REQUIREMENT: PARTS OF A CLAIM

- Preamble sets the tone for the invention's technical environment and class (composition, process, or apparatus, etc.: *a method of, apparatus for, a composition*). It is not limiting if it merely states the purpose of the invention; however, if it breathes life and meaning into the claim (such as if it is essential to tell what is claimed if the body of claim refers to it as antecedent support), it can become limiting.
- Transitional phrase connects the body of the claim to the preamble: *comprising, consisting of, consisting essentially of*, etc. Three types: (1) open-ended (*comprising, including, containing, characterized by*, etc.), (2) closed (*consisting of, also composed of, having, being*, etc., some of these can be interpreted differently), and (3) partially closed (*consisting essentially of*), wherein it allows only those additional elements that do not affect the basic and novel characteristics of the invention without introducing synergism. The applicant has burden of proof to show that additional elements in prior art would materially change the characteristics of the invention. If ABCD is known and ABC is claimed, absence of D must be demonstrated to materially affect the invention.
- Body is a list of elements such as ingredients of a composition, or components of an apparatus; all elements must be interconnected (there must a reason to recite a component, not merely to list it).

READING A CLAIM

Claim reading is an exercise to find out if what a claim states is present in an invention or a written statement.

- Prior art to prove validity of claim
- A device or process to indicate infringement
- Owner specification satisfies §112 ¶1 requirements

Claim does not read on prior art with elements ABCD if the claim is ABC and closed (*consisting of*); however, it reads if the transitional phrase is open (*comprising*) and may or may not read if it is partially closed (*consisting essentially of*).

PUNCTUATION OF CLAIM

A claim consists of one sentence with a comma after the preamble and a colon after a transitional phrase. Each element gets its own paragraph; a semicolon at the end of each paragraph; *and* between the last two elements. More than one period means more than one sentence and thus an indefinite claim (§112 ¶2).