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Redefining Reality: Why Design Patent Protection Should Expand to the Virtual World

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Redefining Reality: Why Design Patent Protection Should Expand to the Virtual World

Abstract

Virtual reality (“VR”) and augmented reality (“AR”) technologies are rapidly maturing. Companies like Facebook and Microsoft are capitalizing on these technologies and actively releasing products to consumers. Both companies’ products blur the line between the real world and the virtual world. The blurring of this line presents novel questions regarding the protection of digital intellectual property that exists solely within the virtual world.

One such question is whether design patent protection will be available to three-dimensional digital models, models of real-world items that are digitally reproduced in the virtual world. To receive design patent protection, 35 U.S.C. § 171 requires, *inter alia*, that the subject matter be an “article of manufacture.” Based on existing precedent from the U.S. Court of Appeals for the Federal Circuit, it appears the court is reluctant to expand design patent protection to three-dimensional digital models. This Comment argues that the apparent reluctance of the Federal Circuit to expand intellectual property protections to three-dimensional digital models, as signaled in its recent decisions in *In re Nuijten* and *ClearCorrect Operating, LLC v. International Trade Commission*, is at odds with design patent’s § 171.

This Comment analyzes § 171 and its broad interpretation by the Federal Circuit’s predecessor, the Court of Customs and Patent Appeals (CCPA). After, the Comment contends that the Federal Circuit’s current trend deviates from the CCPA’s precedent and argues that the court should return to the broad interpretation of § 171. This broad interpretation would provide design patent protection to three-dimensional digital models present in VR and AR worlds.

Keywords

patent, patent protection, virtual reality, VR, augmented reality, AR

COMMENT

REDEFINING REALITY: WHY DESIGN PATENT PROTECTION SHOULD EXPAND TO THE VIRTUAL WORLD

JOHN R. BOULÉ III*

Virtual reality (“VR”) and augmented reality (“AR”) technologies are rapidly maturing. Companies like Facebook and Microsoft are capitalizing on these technologies and actively releasing products to consumers. Both companies’ products blur the line between the real world and the virtual world. The blurring of this line presents novel questions regarding the protection of digital intellectual property that exists solely within the virtual world.

One such question is whether design patent protection will be available to three-dimensional digital models, models of real-world items that are digitally reproduced in the virtual world. To receive design patent protection, 35 U.S.C. § 171 requires, inter alia, that the subject matter be an “article of manufacture.” Based on existing precedent from the U.S. Court of Appeals for the Federal Circuit, it appears the court is reluctant to expand design patent protection to three-dimensional digital models.

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Operating, LLC v. International Trade Commission, is at odds with design patent’s § 171. This Comment analyzes § 171 and its broad interpretation by the Federal Circuit’s predecessor, the Court of Customs and Patent Appeals (CCPA). After, the Comment contends that the Federal Circuit’s current trend deviates from the CCPA’s precedent and argues that the court should return to the broad interpretation of § 171. This broad interpretation would provide design patent protection to three-dimensional digital models present in VR and AR worlds.

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INTRODUCTION

“What is real? How do you define ‘real’? If you’re talking about what you can feel, what you can smell, what you can taste and see, then ‘real’ is simply electrical signals interpreted by your brain.”¹

Given the explosion of virtual reality (“VR”), an environment where the real world is replaced with a virtual one, and augmented reality (“AR”), an environment where the real world is supplemented by computer-generated input,² this once futuristic quote from *The Matrix* has become more relevant today. These technologies are available to consumers through a variety of gadgets, ranging from high-end headsets, such as the Oculus Rift,³ to more common products, such as a smartphone screen and camera that are used in Pokémon Go.⁴ These technologies seek to immerse the user in a virtual reality, seamlessly merging the real and electronic worlds.⁵ As

1. THE MATRIX (Warner Bros. 1999).

2. Vivek Sharma, *Technology Startups: The Game-Changers of Virtual and Augmented Reality*, IPWATCHDOG (June 18, 2016), <http://www.ipwatchdog.com/2016/06/18/technology-startups-virtual-augmented-reality/id=70162>.

3. See Max Chafkin, *Why Facebook’s \$2 Billion Bet on Oculus Rift Might One Day Connect Everyone on Earth*, VANITY FAIR (Sept. 8, 2015, 2:00 PM), <http://www.vanityfair.com/news/2015/09/oculus-rift-mark-zuckerberg-cover-story-palmer-luckey> (describing how the Oculus Rift made the user flinch when lighting firecrackers in a virtual world).

4. See Victor Thomson, *“Pokemon Go” Game Totally Changes Virtual Reality World*, ITECH POST (Aug. 13, 2016, 3:20 AM), <http://www.itechpost.com/articles/24335/20160813/pokemon-go-game-totally-changes-virtual-reality-world.htm> (reporting that the app uses the “smartphone’s GPS to find, train, fight, and capture virtual creatures that are superimposed on the real world”).

5. See Vamien McKalin, *Augmented Reality vs. Virtual Reality: What Are the Differences and Similarities?*, TECH TIMES (Apr. 6, 2014, 10:25 PM), <http://www.techtimes.com/articles/5078/20140406/augmented-reality-vs-virtual->

touted by most manufacturers of VR and AR technology, this technology provides a new canvas for movies, video games, and advertisers.⁶ Content developers create these worlds using three-dimensional models, which are computer-programmed models that mimic items in our world.⁷ Once the technology matures, the line between the physical world and the virtual world may seemingly disappear.⁸ As this line disappears, it may become impossible to distinguish a physical object from a virtual three-dimensional digital model placed right next to it.⁹

Unsurprisingly, the explosion of these technologies presents new challenges and questions regarding intellectual property rights.¹⁰ One question involving the interaction between intellectual property and the VR and AR worlds is whether a three-dimensional digital model will meet the statutory requirements for a design patent, which protects the aesthetic appearance of a functional item.¹¹ In recent years, design patents have grown in value, making them important parts of an intellectual property portfolio.¹² As the use of VR and AR continues to grow, individuals and businesses will likely seek to use such patents to protect the three-dimensional digital models used in these worlds.

reality-what-are-the-differences-and-similarities.htm (concluding that AR might prove more successful because it does not completely remove a user from the real world).

6. See, e.g., Aaron Luber, *What Virtual Reality Will Mean for Advertising*, THINK WITH GOOGLE (June 2016), <https://www.thinkwithgoogle.com/articles/virtual-reality-advertising.html> (noting that VR can work with pre-existing media in the entertainment industry to create new experiences).

7. See *What Is Virtual Reality?*, VIRTUAL REALITY SOC'Y, <https://www.vrs.org.uk/virtual-reality/what-is-virtual-reality.html> (last visited Apr. 28, 2017).

8. See McKalin, *supra* note 5.

9. See Katie Collins, *Oculus Can Now Transform the Real World into a Video Game*, WIRED U.K. (May 27, 2015), <http://www.wired.co.uk/article/oculus-acquires-surreal-vision-to-map-virtual-reality-worlds> (describing a technology that allows Oculus users to interact with real world objects in the virtual world).

10. See, e.g., Jonathan M. Purow, *Virtual Reality May Create Novel IP Issues in the Real World*, LAW360 (Mar. 28, 2016, 10:10 AM), <http://www.law360.com/articles/769479/virtual-reality-may-create-novel-ip-issues-in-the-real-world>.

11. See *General Information Concerning Patents*, USPTO (Oct. 2015), <https://www.uspto.gov/patents-getting-started/general-information-concerning-patents>.

12. See Tracey-Gene Durkin, *IPO Report Shows Design Patent Filings Continue to Rise*, IPWATCHDOG (Aug. 19, 2013), <http://www.ipwatchdog.com/2013/08/19/ipo-report-shows-design-patent-filings-continue-to-rise/id=44720> (overviewing an Intellectual Property Owners Association report that demonstrated a rise in design patent applications); Gene Quinn, *Design Patents: The Under Utilized and Overlooked Patent*, IPWATCHDOG (Sept. 10, 2016), <http://www.ipwatchdog.com/2016/09/10/design-patents/id=72714> (arguing that design patents are becoming a more useful tool to protect an invention).

Although the need for design patent protection of three-dimensional models has grown, design patent protection for the models has an uncertain legal future. Congress last updated the design patent statute in 1952 when it amended 35 U.S.C. § 171 to grant a design patent to “[w]hoever invents any new, original and ornamental design for an article of manufacture.”¹³ Thus, to receive a design patent, the design must be “for an article of manufacture.”¹⁴ As written, the scope of the article of manufacture requirement is unclear, but throughout the twentieth century, courts were willing to interpret the requirement fairly broadly.¹⁵ However, the U.S. Court of Appeals for the Federal Circuit recently articulated a narrower view, first when applying the requirement to electronic and digital technologies,¹⁶ and next when interpreting article of manufacture requirements in statutes akin to § 171.¹⁷

This Comment argues that as VR and AR technologies develop, the Federal Circuit and the U.S. Patent and Trademark Office (USPTO) should interpret the design patent subject matter protection statute broadly, incorporating three-dimensional digital models into its scope. Part I provides background, surveying the history and current state of the art of VR and AR technologies, and reviews the USPTO’s and the courts’ interpretations of § 171 of the design patent statute. Part II then argues that courts should apply a broad interpretation of the article of manufacture requirement as adopted by the U.S. Court of Customs and Patents Appeals (CCPA), and that the Federal Circuit improperly narrowed the scope of an “article of manufacture” when it applied the requirement to three-dimensional digital models.

I. VIRTUAL AND AUGMENTED REALITY: ITS ROOTS, ITS CURRENT STATE, AND THE TREATMENT OF SIMILAR TECHNOLOGIES IN COURT

The recent advancement of VR and AR has put these technologies on a collision course with design patent law. VR and AR technologies were created in the mid-twentieth century and are just reaching maturity

13. 35 U.S.C. § 171 (2012).

14. *Id.*

15. See *infra* Section I.C.2 (discussing early court interpretations of § 171).

16. See *In re Nuijten*, 500 F.3d 1346, 1356–57 (Fed. Cir. 2007); *infra* Section I.C.4 (discussing the modern interpretation of § 171).

17. See *ClearCorrect Operating, LLC v. Int’l Trade Comm’n*, 810 F.3d 1283, 1286 (Fed. Cir. 2015), *reh’g en banc denied*, 819 F.3d 1334 (Fed. Cir. 2016) (per curiam); *infra* Section I.C.4 (discussing the modern interpretation of § 171).

today.¹⁸ In contrast, Congress first created design patent protection in the mid-nineteenth century.¹⁹ As design patent law developed, courts initially maintained an inclusive view of the subject matter the design patent statute protected.²⁰ Recently, however, the Federal Circuit has begun to narrow what subject matter may be protected.²¹

A. *An Overview of Virtual and Augmented Reality*

Understanding the challenges surrounding VR and AR technologies and intellectual property rights requires understanding the technology itself, especially its history and the current state of the virtual and augmented art.

1. *A brief history of virtual and augmented reality*

Depending on how virtual and augmented reality are defined, the two have a surprisingly long history.²² In the 1950s and 1960s, inventors launched various digital and electronic technologies that established the VR world, including both commercial and defense technologies.²³

In the commercial realm, inventors created entertainment technologies to rudimentarily stimulate the user's senses—sight, sound, smell, and touch.²⁴ In the defense realm, Air Force-funded

18. See *infra* Section I.A (surveying the history of VR and AR, the issues inventors have encountered during development, and the current state of the art).

19. See Act of Aug. 29, 1842, ch. 263, § 3, 5 Stat. 543, 543–44; see also *In re Schnell*, 46 F.2d 203, 205 (C.C.P.A. 1931) (discussing the history of the design patent statute).

20. See *infra* Section I.C.1–3 (detailing the expansion of the article of manufacture requirement from small mechanical features, to large immovable objects, to software icons).

21. See *infra* Section I.C.4 (reviewing recent decisions of the Federal Circuit that signal a narrow interpretation of the article of manufacture requirement).

22. See generally *History of Virtual Reality*, VIRTUAL REALITY SOC'Y, <http://www.vrs.org.uk/virtual-reality/history.html> (last visited Apr. 28, 2017) (presenting the chronological history of VR technology from paintings to modern devices, such as the Oculus Rift).

23. Adi Robertson & Michael Zelenko, *The Rise and Fall of Virtual Reality: Voices from a Virtual Past*, VERGE, http://www.theverge.com/a/virtual-reality/oral_history (last visited Apr. 28, 2017); see also *History of Virtual Reality*, *supra* note 22. Some consider large, nineteenth-century panoramic paintings, which had the goal of fully immersing the viewer into a historic event, or nineteenth-century stereoscopes, which combined two images into a three-dimensional image to the viewer, as the first VR technologies. See *History of Virtual Reality*, *supra* note 22; Robertson & Zelenko, *supra*.

24. See Robertson & Zelenko, *supra* note 23 (describing filmmaker Morton Heilig's invention, the Sensorama, which Heilig imagined to be the "cinema of the future" (internal quotation marks omitted)).

research improved flight simulators, moving beyond solely mechanical simulations and adding a digital-visual component.²⁵

As computer-based technology became more affordable to consumers in the 1970s and 1980s, video games exploded in the personal entertainment industry.²⁶ During this period, video game systems shifted away from the large machines found in arcades towards smaller consoles used in the comfort of one's home.²⁷ The electronics industry's shift from command line prompt control of computers to graphical user interface control resulted in the wider availability of video games.²⁸ As the graphical display trend continued, the next step for the video game industry was moving from a screen to a fully-immersed VR video game experience.²⁹

Personal entertainment companies championed the quest to craft technology that could provide VR products for consumers.³⁰ Despite the trend towards in-home video game consoles, video game companies began investing in research and development to create both arcade-based and personal VR video game equipment.³¹ In the early 1990s, companies such as Nintendo and Sega created VR-based video games for use outside of the arcade.³² However, because of technological shortcomings, the systems of the 1990s were never commercially successful; the graphical display systems of the products

25. *See id.* Some in the VR industry considered military flight simulators to be the cutting edge of the field until computers became pervasive in both business and personal use. *Id.*

26. *See id.*

27. *Id.* (emphasizing the success of gaming pioneer Atari's transition from arcades to homes).

28. *Id.* Early users operated a computer by entering textual commands into an interface, such as MS-DOS. *Command Line Interface*, TECHTERMS, https://techterms.com/definition/command_line_interface (last updated Aug. 26, 2014). Graphical user interface controls streamlined this process by allowing users to control a computer using tools like windows, icons, and menus. *Graphical User Interface*, TECHTERMS, <https://techterms.com/definition/gui> (last visited Apr. 28, 2017).

29. *See* Robertson & Zelenko, *supra* note 23.

30. *Id.*

31. *See id.* (discussing the Atari Sunnyvale Research Laboratory, which was meant to "explore the future of digital entertainment"; however, the lab operated for only two years, closing after the video game crash of 1983).

32. *See History of Virtual Reality*, *supra* note 22 (detailing various VR products, including the Nintendo Virtual Boy and Sega's VR glasses, both of which failed). Another company, Virtuality, cornered the arcade-based unit market. *See id.* However, these systems proved unsuccessful because they failed to deliver an experience that kept users coming back. *See* Kyle Fowle, *A Look Back at the Doomed Virtual Reality Boom of the 90s*, KILL SCREEN (Jan. 28, 2015), <http://archive.is/5Lhba>.

did not create the immersive experience that developers promised.³³ Specifically, the graphic systems, consisting of crude three-dimensional digital models, failed to simulate actual, real-world environments.³⁴ This failure caused the boom of the VR market in the 1990s to quickly bust, pushing the technology out of the personal entertainment industry's spotlight.³⁵ The graphic systems that remedied the issues of the technology and enabled VR success became available in the 2000s.³⁶ These systems create the realistic environments that developers originally promised.³⁷

2. *The current state of the art*

In the past five years, developers have made new strides in VR and AR technology.³⁸ Inventors have remedied the issues that plagued the technologies in the 1980s and 1990s—mainly the poor graphical representation of three-dimensional models—through advancements in three-dimensional graphic systems.³⁹ The reemergence of the technology has led to investments from the biggest consumer electronic companies, including Facebook, Microsoft, and Sony.⁴⁰

The Oculus Rift is setting the technological benchmark for the VR industry.⁴¹ Facebook purchased Oculus Rift for \$2 billion in 2014, signaling that the social media company believed VR was ready for a

33. Fowle, *supra* note 32 (characterizing the technology as “rudimentary” when consumers were promised “a glorious vision of the future”). Additionally, primitive personal entertainment VR equipment was often bulky and awkward. *Id.* (describing some of the equipment as allowing only “limited room for movement” and the early headsets as being “twice the size of your head and just as heavy and unbalanced”).

34. *See id.*

35. *See* Robertson & Zelenko, *supra* note 23. VR technology did not simply vanish, but the technology development operated with a lower profile. *Id.* Until VR's reemergence later in the 2000s, the military became the biggest supporter of the technology. *Id.*

36. *See History of Virtual Reality*, *supra* note 22.

37. *Id.*

38. *See, e.g.,* Stuart Dredge, *Facebook Closes Its \$2bn Oculus Rift Acquisition. What Next?*, GUARDIAN (July 22, 2014, 7:02 AM), <https://www.theguardian.com/technology/2014/jul/22/facebook-oculus-rift-acquisition-virtual-reality>.

39. *See History of Virtual Reality*, *supra* note 22 (emphasizing that advancements in graphical display engines and compact computing are driving the latest VR development); *see also supra* Section I.A.1 (discussing issues with the development of VR technology).

40. *See* Sharma, *supra* note 2 (outlining the leading investors in VR and AR technologies).

41. Michael Nuñez, *How It Works: The Oculus Rift*, POPULAR SCI. (Mar. 10, 2015), <http://www.popsci.com/oculus-rift-how-it-works> (naming the Oculus Rift “the most advanced virtual reality (VR) headset ever created”).

return to the consumer electronic spotlight.⁴² One of the main reasons for the publicity surrounding the Oculus Rift is that, for the first time in VR history, a unit is delivering “presence”—the feeling that the user is fully immersed in the virtual world.⁴³ By creating presence, VR technology allows users to interact with a world where the three-dimensional models programmed into the system match those that users come across every day.⁴⁴ Such virtual interactions can also allow the users to interact with items they would never come across, including luxury automobiles and militaristic weapons.⁴⁵

While Facebook has targeted the VR market, Microsoft has targeted VR’s sister, AR.⁴⁶ Microsoft’s flagship AR product, the HoloLens, promises to merge the actual and virtual worlds into one.⁴⁷ Because the HoloLens technology actually augments the user’s perception of the real world, users are able to interact with digital models as if the model was on the workspace in front of them.⁴⁸ Other applications of the technology include a virtual-world television screen to watch a movie, or a virtual model of furniture to better imagine how the real-world product would fit in a living

42. See Chafkin, *supra* note 3.

43. Ben Lang, *Oculus Shares 5 Key Ingredients for the Presence in Virtual Reality*, ROADTOVR (Sept. 24, 2014), <http://www.roadtovr.com/oculus-shares-5-key-ingredients-for-presence-in-virtual-reality> (quoting Martin J. Schumie et al., *Research on Presence in Virtual Reality: A Survey*, 4 CYBERPSYCHOLOGY & BEHAV. 183, 185 (2001)) (defining “presence” as “a psychological state of subjective perception in which even though part or all of an individual’s current experience is generated by and/or filtered through human-made technology, part or all of the individual’s perception fails to accurately acknowledge the role of the technology in the experience”).

44. Collins, *supra* note 9.

45. See, e.g., Sam Loveridge & Lily Prasuethsut, *The Best Oculus Rift Games*, WAREABLE (Jan. 25, 2017), <http://www.wareable.com/oculus-rift/the-best-oculus-rift-games> (listing various Oculus Rift game titles spanning from science fiction, military role playing, and sporting games).

46. See Sharma, *supra* note 2 (identifying Microsoft as the front runner in AR technology based on its 175 inventions filed as patents, compared to second-place Samsung with 140).

47. Terry Myerson, *Opening Windows Holographic to Partners for a New Era of Mixed Reality*, MICROSOFT (June 1, 2016, 12:01 AM), <https://blogs.windows.com/windowsexperience/2016/06/01/opening-windows-holographic-to-partners-for-a-new-era-of-mixed-reality> (“Imagine wearing a VR device and seeing your physical hands as you manipulate an object, working on the scanned 3D image of a real object, or bringing in a holographic representation of another person into your virtual world so you can collaborate.”).

48. See, e.g., Microsoft HoloLens, *Microsoft HoloLens: Partners Make It Real*, YOUTUBE (Mar. 30, 2016), <https://www.youtube.com/watch?v=VzAwdBZ3KCQ> (providing examples of the various partner industries for Microsoft’s AR technology).

room.⁴⁹ As these examples illustrate, the technology's goal is to fully integrate virtual and physical reality.

VR and AR stand on the cusp of pushing the world into a new technological frontier, blurring the lines between the physical and virtual worlds.⁵⁰ Consequently, they present new questions within intellectual property law, such as whether intellectual property protection should extend to three-dimensional digital models.⁵¹

B. *An Overview of Design Patent Protection*

A design patent is only one form of federal protection for intellectual property. Federal law protects several forms of intellectual property: copyrights, trademarks, trade secrets, and patents.⁵² A copyright protects an author's or artist's work,⁵³ a

49. *See id.*

50. *See* Myerson, *supra* note 47.

51. *See* Purow, *supra* note 10; Po Yi et al., *Virtual Reality Creates Potential Real Legal Issues*, VENABLE (July 9, 2015), <https://www.venable.com/virtual-reality-creates-potentially-real-legal-issues-07-09-2015>.

52. *See* ROBERT P. MERGES ET AL., *INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE* 24–25 (6th ed. 2012) (summarizing the structure of U.S. intellectual property rights protection). Federal trade secret protection is a recent development; the Defend Trade Secrets Act was signed into law in May of 2016. Defend Trade Secrets Act of 2016, Pub. L. No. 114-153, 130 Stat. 376; *see* Eric Goldman, *The New “Defend Trade Secrets Act” Is the Biggest IP Development in Years*, FORBES (Apr. 28, 2016, 1:04 PM), <http://www.forbes.com/sites/ericgoldman/2016/04/28/the-new-defend-trade-secrets-act-is-the-biggest-ip-development-in-years>. This Act provides a federal cause of action for a violation of trade secrets and does not supplant state-law-based trade secret regimes; however, the federal law includes an *ex parte* seizure provision that may present a benefit to the federal cause of action. Sebastian Kaplan & Patrick Premo, *The Defend Trade Secrets Act of 2016 Creates Federal Jurisdiction for Trade Secret Litigation*, IPWATCHDOG (May 23, 2016), <http://www.ipwatchdog.com/2016/05/23/defend-trade-secrets-act-2016-creates-federal-jurisdiction-trade-secret-litigation/id=69245>. There are other forms of state-law-based intellectual property doctrines, including the right of publicity and various contract-based protections. *See generally* MERGES ET AL., *supra*, at 1005–06 (describing state law doctrines and how they supplement federal intellectual property regimes).

53. Well-known copyright infringement litigation has concerned literary works, *see, e.g.*, *Scholastic, Inc. v. Stouffer*, 221 F. Supp. 2d 425, 427–32 (S.D.N.Y. 2002) (addressing author J.K. Rowling's *Harry Potter* book series); works of the visual arts, *see, e.g.*, *Verified Complaint for Injunctive and Other Relief at 2–7*, *Whitmill v. Warner Bros. Entm't, Inc.*, No. 4:11-cv-752 (E.D. Mo. Apr. 28, 2011) (concerning boxer Mike Tyson's famous tribal tattoo, which was used without the permission of the artist, S. Victor Whitmill, in the film *Hangover Part II*); and works of musical compositions and sound recordings, *see, e.g.*, *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 572–74 (1994) (assessing the parody of Roy Orbison's hit song “Oh, Pretty Woman” in 2 Live Crew's “Pretty Woman”).

trademark protects a company's image in commerce,⁵⁴ a trade secret protects a company's secret device or manufacturing process,⁵⁵ and a patent protects an invention.⁵⁶ On their edges, these bodies of law interact and overlap with each other.⁵⁷

When issuing a patent, the federal government grants the inventors a property right in their inventions.⁵⁸ This property right grants the right to exclude others from "making, using, offering for sale, selling or importing the invention[]" within the United States, or importing the invention into the United States.⁵⁹ The USPTO is statutorily authorized to issue three types of patents: (1) utility patents, (2) design patents, and (3) plant patents.⁶⁰ The most common type of patent is a utility patent, which is granted for novel, useful, and nonobvious inventions.⁶¹ In contrast, a design patent is granted for "any new, original and ornamental design for an article of manufacture."⁶² The third type of patent, a plant patent, is of much more limited use in that

54. Notable trademark infringement litigation has concerned Adidas's famous Three-Stripe mark used on a lookalike shoe sold by Payless, *see* Adidas-Am., Inc. v. Payless Shoesource, Inc., 546 F. Supp. 2d 1029, 1040–43 (D. Or. 2008), and the trade dress—the commercial appearance—of taco restaurants, *see* Two Pesos, Inc. v. Taco Cabana, Inc., 505 U.S. 763, 765–67 (1992).

55. Famous trade secret misappropriation litigation has involved one of DuPont's chemical manufacturing processes, *see* E.I. duPont deNemours & Co. v. Christopher, 431 F.2d 1012, 1013–14 (5th Cir. 1970), and large-scale manufacturing machines, *see* Kadant, Inc. v. Seeley Mach., Inc., 244 F. Supp. 2d 19, 24–26, 40 (N.D.N.Y. 2003) (rejecting an injunction for trade secrets involving papermaking machinery).

56. Prominent patent infringement litigation has included Samuel Morse's invention of the telegram, *see* O'Reilly v. Morse, 56 U.S. (15 How.) 62, 62–67 (1853), and smartphones, *see* Apple, Inc. v. Samsung Elecs. Co., 678 F.3d 1314, 1317–19 (Fed. Cir. 2012).

57. *See* MERGES ET AL., *supra* note 52, at 25.

58. *General Information Concerning Patents*, *supra* note 11.

59. 35 U.S.C. § 154 (2012); *see also* *General Information Concerning Patents*, *supra* note 11.

60. *General Information Concerning Patents*, *supra* note 11. *See generally* *Types of Patents*, U.S. PAT. & TRADEMARK OFF. (Mar. 31, 2016), <http://www.uspto.gov/web/offices/ac/ido/oeip/taf/patdesc.htm> (explaining the differences between utility, plant, and design patents).

61. *See* *Types of Patents*, *supra* note 60; *U.S. Patent Statistics Chart, Calendar Years 1963–2015*, U.S. PAT. & TRADEMARK OFF. (June 15, 2016), https://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm (showing that utility patents are the USPTO's most issued type of patent). An example of a utility patent is one issued for a pizza box. *See, e.g.*, U.S. Patent No. 4,441,626 (filed Dec. 14, 1981) (claiming a patent for an improved pizza box).

62. 35 U.S.C. § 171.

it is granted to anyone who “invents or discovers and asexually reproduces any distinct and new variety of plant.”⁶³

There are key differences between a utility patent and a design patent. First, a utility patent protects the way an article—the subject matter of the invention or design—functions; a design patent protects an article’s aesthetic appearance.⁶⁴ Second, the term of a utility patent is twenty years, while the term of a design patent is fourteen or fifteen years.⁶⁵ Third, although an inventor can file multiple claims within a utility patent application, a design patent application may only contain one claim.⁶⁶ Finally, the pendency of the prosecution for a utility patent is typically between twenty-five and twenty-eight months,⁶⁷ and the pendency of the prosecution for a design patent is typically between seventeen and twenty months;⁶⁸ therefore, the pendency of a typical design patent is six months to a year shorter than that of a utility patent. Despite being less common than a utility patent, the design patent is gaining popularity and proving to be just as valuable in an intellectual property portfolio.⁶⁹

Rather than protect the article itself, a design patent protects the design “embodied in or applied to an article”; in other words, a

63. § 161. An example of a plant patent includes various varieties of corn. *See, e.g.*, U.S. Patent No. 8,962,953 (filed May 2, 2013) (claiming “Plants and Seeds of a Corn Variety”). Plant patents are the least common type of patent. *U.S. Patent Statistics Chart, supra* note 61. Due to the inherent differences between plant patents and design and utility patents, including the lack of an article of manufacture requirement, this Comment does not discuss plant patents beyond this introduction.

64. MPEP § 1502.01 (9th ed. Rev. 7, Nov. 2015).

65. *Id.* § 1502.01(A). The exact term of the design patent depends on the filing date: it is fifteen years if the patent was filed on or after May 13, 2015, and fourteen years if filed before that date. *Id.*

66. *Id.* § 1502.01(C).

67. *See Traditional Total Pendency*, U.S. PAT. & TRADEMARK OFF., <http://www.uspto.gov/corda/dashboards/patents/kpis/kpiOverallPendency.kpixml> (last visited Apr. 28, 2017). The USPTO defines pendency as “the average number of months from the patent application filing date to the date the application has reached final disposition (e.g., issued as a patent or abandoned).” *Traditional Total Pendency*, U.S. PAT. & TRADEMARK OFF.: DATA VISUALIZATION CTR., <https://www.uspto.gov/corda/dashboards/patents/main.dashxml?CTNAVID=1004> (last visited Apr. 1, 2017).

68. *See Design Total Pendency*, U.S. PAT. & TRADEMARK OFF., <http://www.uspto.gov/corda/dashboards/patents/kpis/kpi99.kpixml> (last updated Mar. 2017).

69. *See Quinn, supra* note 12; *see also* Haydn Shaughnessy, *The Surprise Leader in Design Patents*, FORBES (Aug. 22, 2013, 8:52 AM), <http://www.forbes.com/sites/haydnshaughnessy/2013/08/22/the-surprise-leader-in-design-patents> (examining the race between consumer electronics corporations to accumulate design patent rights).

design patent protects the article's aesthetic appearance.⁷⁰ Because copyright protection is not available for useful articles, Congress passed design patent legislation to fill the gap between the copyright protection available to artists and the patent protection available to inventors.⁷¹ Accordingly, design patents protect the creative or aesthetic features of a utilitarian product.⁷² As a result, a designer⁷³ theoretically could protect the same design by both copyright and design patent law.⁷⁴ However, because the owner of a design patent is granted an absolute right to exclude for a period of fourteen years, Congress created strict statutory requirements to receive a design patent grant from the USPTO.⁷⁵

1. *A design patent claim*

Unlike utility patents, which may contain multiple claimed inventions, the USPTO restricts a design patent to a single claimed

70. MPEP § 1502; *see also Ex parte Cady*, 1916 Dec. Comm'r Pat. 62, 63 (stating that "[t]he invention is not the article and is not the design *per se*, but is the design *applied*"); Bruce A. Kugler & Craig W. Mueller, *A Fresh Perspective on Design Patents*, COLO. LAW., July 2009, at 71 (discussing the protection granted by a design patent).

71. *See* 8 DONALD S. CHISUM, CHISUM ON PATENTS § 23.02 (2016) (documenting the historical development that led to the design patent act); *see also* Jason J. Du Mont & Mark D. Janis, *Virtual Designs*, 17 STAN. TECH. L. REV. 107, 111 (2013) (providing a thorough dive into the foundational debate over whether to enact design patent protection in the United States, and highlighting the holes between copyright and utility patent protection at the time design patent protection was being considered). The "useful article doctrine" of copyright law precludes copyright protection for industrial designs that are not separable and independent from the utilitarian parts of the article. *See* H.R. REP. NO. 94-1476, at 55 (1976) (reporting Congress's intent to distinguish between "works of applied art," which receive copyright protection, and industrial designs, which do not receive copyright protection, in passing the Copyright Act of 1976).

72. *See* 8 CHISUM, *supra* note 71, § 23.02.

73. The word "designer" is used to denote the "inventor" of a design patent, as distinguished from an "inventor" of a utility patent.

74. *See* Andrew Beckerman-Rodau, *The Problem with Intellectual Property Rights: Subject Matter Expansion*, 13 YALE J.L. & TECH. 35, 80–81 (2010) (reviewing the overlapping regimes of intellectual property and emphasizing the expanding view of protectable subject matter).

75. *See* 35 U.S.C. § 171 (2012) (enumerating the requirements to receive a design patent); MPEP § 1504.01 (reviewing the jurisprudence interpreting the requirements of § 171); *see also* 8 CHISUM, *supra* note 71, § 23.03 (detailing the requirements for patenting a design). The owner of a copyright is given a longer period of protection, which is typically the life of the author plus seventy years; however, because of the longer period of protection, the right of a copyright owner is not absolute. MERGES ET AL., *supra* note 52, at 26–27. The rights of others to use the copyrighted work include, among other rights, fair use and independent creation. *Id.*

design.⁷⁶ Every patent application, utility or design, includes claims, which establish the metes and bounds of the property right granted in the patent.⁷⁷ A patent grants the right to exclude others from infringing on the enumerated claims.⁷⁸ Unlike a utility patent, which describes the claimed invention in words, a design patent describes the claimed property right through drawings.⁷⁹ Upon filing an application at the USPTO, the designer must submit enough views of the design to create “a complete disclosure” of the design’s appearance.⁸⁰ As seen in the examples below, the solid lines of a design patent claim constitute the actual ornamental aspects of the claimed design, while the dashed lines show the surrounding environment, which is not part of the designer’s claim.⁸¹

Designs for both the early version of the iconic Coca-Cola bottle (Figure 1) and the Nintendo Game Boy (Figure 2) include only solid lines; therefore, the patents claimed the entire ornamental design of the bottle and the game. A third example is the design of a pair of Oakley sunglasses (Figure 3), which exemplifies the interplay of the solid and dashed lines to show what is and is not claimed by the designer.

76. See 37 C.F.R. § 1.153 (2012) (stating that “[m]ore than one claim is neither required nor permitted”); see also MPEP § 1503.01(III) (outlining that “[a] design patent application may only include a single claim”).

77. See Quinn, *supra* note 12 (conveying the basics of patent claims, including the interplay between the claims and the specification of the patent).

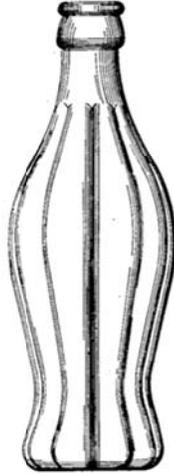
78. *Id.*

79. Under certain circumstances, a design patent application may contain a photograph in lieu of a drawing. See MPEP § 1503.02(V).

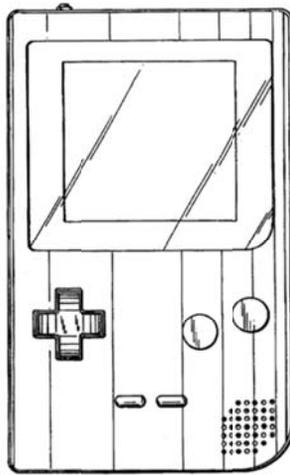
80. 37 C.F.R. § 1.152; MPEP § 1503.02.

81. See MPEP § 1503.02(III); see also Kugler & Mueller, *supra* note 70, at 75–76 (discussing the process of patent claiming through drawings for a design patent).

*Figure 1: Coca-Cola Bottle Design Patent Claim*⁸²



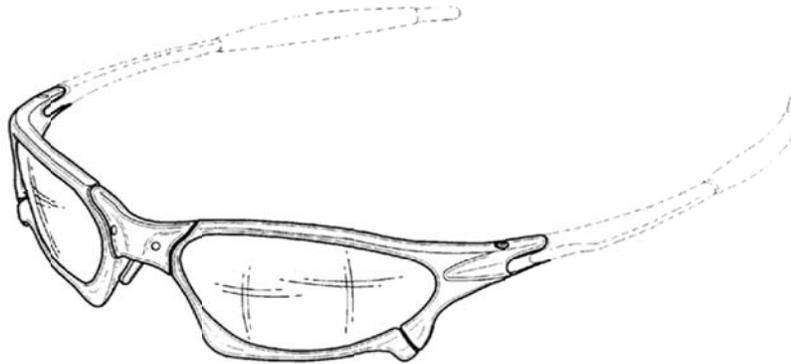
*Figure 2: Nintendo Game Boy Design Patent Claim*⁸³



82. U.S. Patent No. D48,160 fig.1 (filed Aug. 18, 1915).

83. U.S. Patent No. D383,798 fig.1 (filed July 10, 1996).

Figure 3: Oakley Sunglasses Design Patent Claim⁸⁴



Upon submission of a design patent application, the USPTO spends seventeen to twenty months examining the submitted application to ensure compliance with statutory requirements, including § 171.⁸⁵

2. *Statutory requirements to receive a design patent*

A designer must satisfy four requirements prior to receiving a design patent from the USPTO: the design must be (1) novel, (2) nonobvious, (3) ornamental, and (4) an article of manufacture.⁸⁶ These statutory requirements are outlined in 35 U.S.C. § 171, which reads, “Whoever invents any new, original and ornamental design for an article of manufacture may obtain a patent therefor, subject to the

84. U.S. Patent No. D470,166 fig.1 (filed Aug. 3, 2001).

85. See *supra* text accompanying note 68; see also *Design Patent Application Guide*, U.S. PAT. & TRADEMARK OFF., <http://www.uspto.gov/patents-getting-started/patent-basics/types-patent-applications/design-patent-application-guide> (last updated Aug. 13, 2012) (providing an overview of the entire design patent application process, including USPTO examination procedures). The design patent prosecution process is outside the scope of this Comment, but the process involves interactions with a patent examiner at the USPTO. See CRAIG ALLEN NARD, *THE LAW OF PATENTS* 42–46 (3d ed. 2014) (providing a brief overview of the patent prosecution process). For a critique of the current design patent prosecution system, see William T. Fryer, III, *Industrial Design Protection in the United States of America—Present Situation and Plans for Revision*, 19 U. BALT. L. REV. 198, 210–11 (1989) (doubting the practicality of the design patent because of (1) the courts’ inability to uniformly apply the standards for design patent infringement due to uncertainty; (2) the protracted process to obtain a design patent; and (3) the great expense for the patent, including the necessary attorney and office fees).

86. See 8 CHISUM, *supra* note 71, § 23.03; MERGES ET AL., *supra* note 52, at 422.

conditions and requirements of this title.”⁸⁷ Because § 171 is subject to the “conditions and requirements” of Title 35 of the U.S. Code, the Federal Circuit has looked to other sections of that title, such as § 102 and § 103, to interpret its scope.⁸⁸

a. The relationship between 35 U.S.C. § 101 and § 171

Within Title 35 of the U.S. Code, § 171 for design patents is analogous to § 101, which defines the patentable subject matter for a utility patent.⁸⁹ Section 101 reads, “Whoever 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 therefor, subject to the conditions and requirements of this title.”⁹⁰

Section 171 differs in two ways from the statutory requirements to receive a utility patent under § 101. First, § 171 does not use the word “useful,” and second, § 171 includes the word “original” to distinguish a design from a utility patent.⁹¹ In its analysis of the overall structure of the design patent statutory scheme, the Federal Circuit has explained that the “newness” and “originality” requirements of § 171 import the requirements of § 102 (novelty) and § 103 (nonobviousness) because § 171 states that the statutory provision is subject to the “conditions and requirements of this title.”⁹²

b. The novelty, nonobvious, and ornamentality requirements of § 171

Given this relationship between § 171 and § 101, the first three requirements for design patents are relatively straightforward. First, § 171 requires that the claimed design is novel, which means that no

87. 35 U.S.C. § 171 (2012).

88. *Int'l Seaway Trading Corp. v. Walgreens Corp.*, 589 F.3d 1233, 1238 (Fed. Cir. 2009); see also Seymour & Andrew W. Torrance, *(R)evolution in Design Patentable Subject Matter: The Shifting Meaning of “Article of Manufacture”*, 17 STAN. TECH. L. REV. 183, 187–88 (2013).

89. See MPEP § 1502.01 (9th ed. Rev. 7, Nov. 2015) (distinguishing utility patents from design patents).

90. 35 U.S.C. § 101.

91. *Int'l Seaway Trading Corp.*, 589 F.3d at 1238.

92. *Id.*; see also Seymour & Torrance, *supra* note 88, at 187–88. According to the Federal Circuit, “[t]he originality requirement in § 171 dates back to 1842 when Congress enacted the first design patent law.” *Int'l Seaway Trading Corp.*, 589 F.3d at 1238. The court went on to emphasize that § 171 was therefore likely to incorporate the originality requirement of copyright law: “requiring that the work be original with the author.” *Id.*

prior art discloses the same design.⁹³ Prior art is the collection of previous designs known to the public as defined by § 102.⁹⁴ In *Gorham Co. v. White*,⁹⁵ the Supreme Court outlined the test for design novelty—the “ordinary observer” test.⁹⁶ This test finds a design anticipated, or not novel, if an “ordinary observer” could mistake that design with another design that preceded it.⁹⁷

Second, courts interpret § 171 to require that the design is nonobvious, which designers establish by exercising “inventive or originative faculty.”⁹⁸ In *International Seaway Trading Corp. v. Walgreens Corp.*,⁹⁹ the Federal Circuit outlined the two-pronged test for nonobviousness.¹⁰⁰ In the first prong, one having “ordinary skill in the art”¹⁰¹ determines “whether to combine earlier [prior art] references to arrive at a single piece of art for comparison with the potential design or to modify a single prior art reference.”¹⁰² After establishing this reference, the finder-of-fact applies the second prong by using novelty’s “ordinary observer” test to compare the formulated reference from the first prong to the design seeking patent protection.¹⁰³ In other words, after one having ordinary skill in the art establishes an objective prior art reference, the finder-of-fact determines whether an “ordinary observer” would find the formulated design substantially similar to the design seeking

93. See 8 CHISUM, *supra* note 71, § 23.03[5] (outlining the design patent statutory requirement of novelty).

94. See 35 U.S.C. § 102(a) (providing, in part, that an inventor may claim a patent unless “the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the” patent claim).

95. 81 U.S. (14 Wall.) 511 (1871).

96. *Id.* at 528.

97. See *id.* (“[I]f, in the eye of an ordinary observer, giving such attention as a purchaser usually gives, two designs are substantially the same, if the resemblance is such as to deceive such an observer, inducing him to purchase one supposing it to be the other . . .”).

98. *Smith v. Whitman Saddle Co.*, 148 U.S. 674, 679 (1893).

99. 589 F.3d 1233 (Fed. Cir. 2009).

100. *Id.* at 1240.

101. See 2 CHISUM, *supra* note 71, § 5.04A[1] (surveying the contours of patent law’s “person having ordinary skill in the art,” including how the “person” is formulated); 8 *id.*, § 23.03[6][a].

102. See *Int’l Seaway Trading Corp.*, 589 F.3d at 1240. By creating this first step in establishing nonobviousness, the court implemented a standard that permitted objective evidence from expert testimony from designers in the field. See *In re Nalbandian*, 661 F.2d 1214, 1216–17 (C.C.P.A. 1981) (reviewing the reasoning behind the objective determination of one having ordinary skill in the art).

103. *Int’l Seaway Trading Corp.*, 589 F.3d at 1240.

protection; if they are found similar, then the design is obvious and thus not patentable.¹⁰⁴

Third, the claimed design meets the ornamentality requirement when it creates “a more pleasing experience” than the prior art.¹⁰⁵ In *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*,¹⁰⁶ the Supreme Court explained that “a design must present an aesthetically pleasing appearance that is not dictated by function alone.”¹⁰⁷ Therefore, some measure of pleasing appearance is required to receive a design patent.¹⁰⁸ The scope of § 171’s final requirement, however, is not so clear.

C. *The Design Patent Article of Manufacture Requirement of § 171*

The final requirement to receive a design patent is that the design is “for an article of manufacture.”¹⁰⁹ Over time, Congress has modified the text of this requirement within the design patent statute, and the courts have expanded their interpretation.¹¹⁰

1. *The changing language of § 171*

The article of manufacture requirement has been part of the statute since its initial passage.¹¹¹ However, through various revisions, Congress simplified the text of the requirement. When originally enacted in 1842, the design patent statute granted design patents for the following categories:

[(1)] any . . . design for a manufacture, whether of metal or other material or materials, . . . [(2)] design for the printing of woollen, silk, cotton, or other fabrics, . . . [(3)] design for a bust, statute, or

104. *See id.* at 1240, 1243–44.

105. MERGES ET AL., *supra* note 52, at 424.

106. 489 U.S. 141 (1989).

107. *Id.* at 148. The Court likely adopted this position from the predecessor to the Federal Circuit, the U.S. Court of Customs and Patent Appeals (C.C.P.A.), which described the requirement as met when a design “possess[ed] more grace and pleasing appearance” than a prior art. *In re Koehring*, 37 F.2d 421, 422 (C.C.P.A. 1930).

108. *See Bonito Boats*, 489 U.S. at 148; *Koehring*, 37 F.2d at 422 (clarifying that the pleasing appearance is not confined to the beauty in the “aesthetics or fine arts”). *But see* Seymour & Torrance, *supra* note 88, at 189 (quoting *Contico Int’l, Inc. v. Rubbermaid Commercial Prods., Inc.*, 665 F.2d 820, 825 (8th Cir. 1981)) (arguing that the ornamentality requirement that the Supreme Court set in *Bonito Boats* has been abandoned by the lower courts, including the Federal Circuit, and that some courts have held that the design must merely be considered “not ugly . . . when compared to prior designs”).

109. 35 U.S.C. § 171 (2012).

110. *See infra* Sections I.C.1–2 (explaining the shifting language of § 171 and how courts interpret that language).

111. *See* Act of Aug. 29, 1842, ch. 263, § 3, 5 Stat. 543, 544.

bas relief or composition in alto or basso relievo, or [(4)] any . . . impression or ornament, or . . . [(5)] any . . . pattern, or print, or picture, to be either worked into or worked on, or printed or painted or cast or otherwise fixed on, any article of manufacture, or [(6)] any . . . shape or configuration of any article of manufacture not known or used by others . . .¹¹²

Subsequently, Congress revised the statute in 1870 to include the following subject matters:

[(1)] design for a manufacture, bust, statue, alto-relievo, or bas-relief; . . . [(2)] design for the printing of wool[1]en, silk, cotton, or other fabrics; . . . [(3)] impression, ornament, pattern print, or picture, to be printed, painted, cast, or otherwise placed on or worked into any article of manufacture; or . . . [(4)] shape or configuration of any article of manufacture . . .¹¹³

Ultimately, in 1902, Congress arrived at the statute's current wording by amending the statute to read solely "design for an article of manufacture."¹¹⁴ At the time, the USPTO interpreted the change as a simplification of the language of the statute and not as a limitation of the previous enumeration of patentable subjects.¹¹⁵ Although amended twice more in 1939 and 1952, the design patent statute's wording of the article of manufacture requirement has stayed the same.¹¹⁶

2. *Early court interpretations of § 171*

While design patents initially protected smaller, tangible items, such as statues and industrial designs,¹¹⁷ in the early twentieth century, the courts began to interpret the article of manufacture requirement more broadly. In *In re Hadden*,¹¹⁸ the Court of Appeals

112. *Id.*; see also *In re Schnell*, 46 F.2d 203, 205 (C.C.P.A. 1931) (describing the original design patent statute).

113. Act of July 8, 1870, ch. 230, § 71, 16 Stat. 198, 210; see also *Schnell*, 46 F.2d at 205 (quoting the 1870 Act).

114. Act of May 9, 1902, ch. 783, 32 Stat. 193, 193; see also Seymour & Torrance, *supra* note 88, at 192 (indicating that when Congress amended the 1902 Act, the legislature simplified the language for the patentability requirements).

115. See *Schnell*, 46 F.2d at 205 ("Congress did not, in amending the act in 1902, intend to omit as proper subjects for a design patent—any new and original impression, ornament, patent, print, or picture to be printed, painted, cast, or otherwise placed on or worked into any article of manufacture." (quoting *Ex parte Fulda*, 1913 Dec. Comm'r Pat. 206, 207)).

116. Seymour & Torrance, *supra* note 88, at 192.

117. See Act of Aug. 29, 1842, ch. 263, 5 Stat. 543, 544 (including protection for, *inter alia*, a "design for a bust, statue, or bas relief or composition in alto or basso relievo").

118. 20 F.2d 275 (D.C. Cir. 1927).

for the District of Columbia (now known as the D.C. Circuit) faced a novel question on appeal from the USPTO: whether a designer may claim a patent for a life-sized grandstand.¹¹⁹ The USPTO had decided that the grandstand, while a “manufacture” within the meaning of the utility patent statute, was not an “article of manufacture” within the meaning of the design patent statute; it cautioned that an observer would not be aware of the grandstand’s ornamental features because of its size and immobility.¹²⁰ However, the D.C. Circuit dismissed the USPTO’s distinction between a “manufacture” and an “article of manufacture,” finding it nearly impossible to distinguish between the two.¹²¹ The court ultimately incorporated the accepted meaning of “manufacture” from the utility patent statute into the design patent statute’s article of manufacture requirement.¹²² The court’s holding that size and immobility are not dispositive characteristics thus broadened the term’s accepted meaning.¹²³

Shifting away from the tangible, typical design, in *In re Hruby*¹²⁴ the U.S. Court of Customs and Patent Appeals (CCPA) interpreted the scope of an article of manufacture to include the ornamental display of a fountain.¹²⁵ During examination at the USPTO, the designer claimed the following fountain:

119. *Id.* at 275.

120. *Id.* at 275–76.

121. *Id.* at 276.

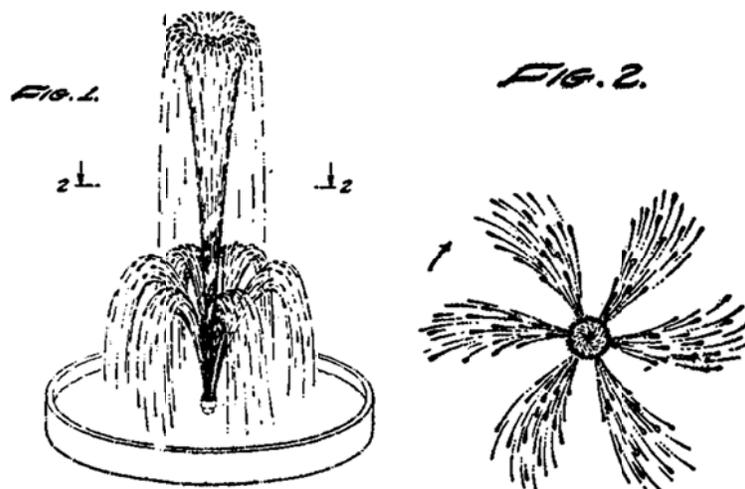
122. *Id.*

123. *Id.* (citing *Riter-Conley Mfg. Co. v. Aiken*, 203 F. 699, 702 (3d Cir. 1913)).

124. 373 F.2d 997 (C.C.P.A. 1967).

125. *Id.* at 998–99.

Figure 4: *Hruby Design Patent Claim*¹²⁶



The examiner, and ultimately the Patent Office Board of Appeals (“the Board”), rejected the claim, finding that because the designer claimed the part of the fountain that was entirely made of water in motion, the design was not within the statutory meaning of an article of manufacture.¹²⁷ The CCPA reversed the Board’s decision, outlining several important factors.¹²⁸ First, the court rejected the notion that something made up of “fleeting” or ephemeral particles should not be protected by a design patent.¹²⁹ To this point, the CCPA analogized the water droplets in a fountain to the atomic particles that constitute all solid objects.¹³⁰ It emphasized that while a solid object appears to be a singular item, it is actually millions of small particles, much like a fountain made up of moving droplets of water that appear to be a continuous, singular stream of water.¹³¹

126. *Id.* at 998.

127. *Id.* at 999 (quoting the Board as describing the design as “wholly a fleeting product of nozzle arrangements and control of operating pressure or pressures” and that “the pattern exists only as a product or ‘effect’ of the mechanical organization during its continued operation”).

128. *Id.* at 1002; *see also infra* Sections I.C.3 (discussing the extension of design patents to software and *Hruby*’s lasting impact on the interpretation of the design patent statute).

129. *Hruby*, 373 F.2d at 999.

130. *Id.* at 999–1000 (citing the scientific understanding that a solid is mainly empty space, constructed of nuclei and electrons).

131. *Id.*

Second, the court reaffirmed the holding in *Hadden* that size and immobility do not create unpatentable subject matter.¹³² Finally, the court rejected the argument that the water sprays did not constitute an article of manufacture because they could not “exist of themselves.”¹³³ Specifically, the CCPA held that “the dependence of the existence of a design on something outside itself is [not] a reason for holding it is not a design ‘for an article of manufacture.’”¹³⁴ The court emphasized that many designs depend on outside factors for their outward appearance.¹³⁵ Thus, the CCPA held that under the design patent statute, an “article of manufacture” might be intangible and dependent upon another object. This was the last time that the CCPA or its successor, the Federal Circuit, heard a case that required a plain text interpretation of § 171’s article of manufacture requirement; however, following the advent of computers, the USPTO had to consider whether software icons were within the scope of the requirement.¹³⁶

3. *Design patent protection and software*

Design patents and software had their first encounter at the USPTO as companies began to create and use software icons.¹³⁷ In the 1980s, computer-generated graphics and icons burgeoned onto the design scene.¹³⁸ Around the same time, the Xerox Corporation (“Xerox”) broke new ground at the USPTO by filing design patent applications for its computer icons.¹³⁹ Ultimately, the USPTO issued Xerox design patent protection based on some of its initial

132. *Id.* at 1000 (reaffirming *Riter-Conley Mfg. Co. v. Aiken*, 203 F. 699 (3d Cir. 1913), the basis of the *Hadden* court’s holding); *see also supra* text accompanying notes 118–23 (detailing the CCPA’s reasoning for its holding in *Hadden*).

133. *Hruby*, 373 F.2d at 1001.

134. *Id.*

135. Examples of designs that depend on outside factors for their ultimate appearance include (1) a lampshade dependent upon the lightbulb being turned on; (2) a woman’s hosiery dependent upon a woman’s legs; (3) inflated articles, such as balloons, air mattresses, and pool floats; and (4) wallpaper that requires being placed on the wall for a full understanding of the design. *Id.*

136. *See Seymour & Torrance, supra* note 88, at 203–04 (detailing the USPTO’s extension of design patent grants to software icons).

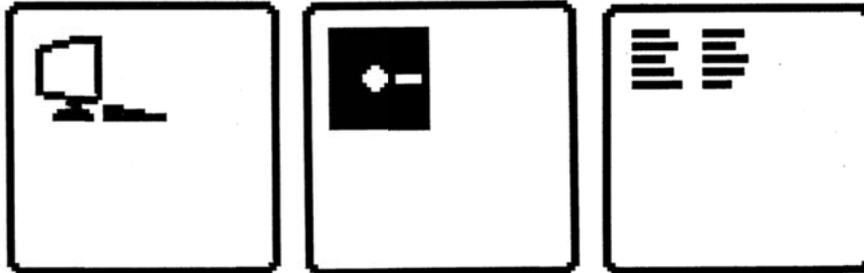
137. *Id.* at 200.

138. *Id.*

139. Lance L. Vietzke, *Software as the Article of Manufacture in Design Patents for Icons*, 21 AIPLA Q.J. 138, 146 (1993).

applications.¹⁴⁰ Figure 5 contains a sampling of the protected primitive icons.

Figure 5: Xerox Software Icon Design Patent Claims¹⁴¹



Upon issuing these patents, the USPTO received several letters inquiring whether software icons met the article of manufacture requirement and qualified for design patent protection.¹⁴² An overwhelming majority of the letters advocated for expanding design patents to protect software icons; however, one letter feared that granting design patents for software icons would blur the line between copyright and patent protections.¹⁴³ After receiving these letters, and presumably after conducting its own study of the subject, the USPTO began rejecting design patent applications for software icons.¹⁴⁴

The USPTO's seemingly ad hoc shift on the patentability of software icons resulted in the denial of later Xerox applications. In *Ex parte Strijland*,¹⁴⁵ Xerox claimed in its patent application the "design for a[n] Information Icon for Display Screen of a Programmed Computer System."¹⁴⁶ Upon initial review, the examiner rejected the software icon as being unpatentable subject matter under § 171.¹⁴⁷ In response, Xerox argued that the design was "an ornamental design for the display screen of a programmed

140. See *id.* (recounting the history of Xerox's software icon design patent filings and stating that the USPTO granted design patents for Xerox's icons in 1988).

141. These three icons are from U.S. Patent No. D295,630, U.S. Patent No. D295,876, and U.S. Patent No. D296,218, respectively, and, originally, all three design patents were assigned to Xerox.

142. See Vietzke, *supra* note 139, at 146–47.

143. *Id.* at 147; see also *supra* text accompanying notes 70–75 (explaining that design patent protection was passed as a gap-filling measure between copyright and patent law).

144. Vietzke, *supra* note 139, at 147.

145. No. 92-0623, 26 U.S.P.Q.2d (BNA) 1259, 1260 (B.P.A.I. Apr. 2, 1992).

146. *Id.* at 1261 n.1.

147. *Id.* at 1261.

computer system.”¹⁴⁸ Further, to pass the § 171 article of manufacture requirement, Xerox identified the computer as the article of manufacture.¹⁴⁹ The examiner ultimately rejected the application because it did not include a depiction or description of the computer itself in the application.¹⁵⁰ On appeal from the examiner, the Board upheld the rejection.¹⁵¹ The Board explained that merely presenting a picture on a computer’s display does not constitute a protectable design; rather, it is solely because “the icon is an integral part of the operation of a programmed computer” that the potential for patentability exists.¹⁵²

Although the Board’s view in *Strijland* withstood opposition at the USPTO, subsequent challengers chipped away at its stronghold. In *Ex parte Tayama*,¹⁵³ the Board appeared open to expanding protection to software icons.¹⁵⁴ The designer claimed the “ornamental design

148. *Id.*

149. *Id.* at 1265.

150. *Id.*

151. *Id.* at 1261. The Board also used the same reasoning in *Ex parte Donaldson*, No. 92-0546, 26 U.S.P.Q.2d (BNA) 1250, 1251 (B.P.A.I. Apr. 2, 1992). In both opinions, the Board repeats large portions of text, further evidencing that these cases were decided simultaneously. *Compare, e.g., Donaldson*, 26 U.S.P.Q.2d at 1257 (“The phrase ‘design for an article of manufacture’ has long appeared in the design statutes.”), *with Strijland*, 26 U.S.P.Q.2d at 1261 (same).

A simplified explanation of the USPTO appeals process is as follows: Upon an adverse decision on patentability from an examiner, the appellee must file a notice of appeal and submit an appeal brief to the Board. *Appeals*, U.S. PAT. & TRADEMARK OFF. (Jan. 25, 2016), <https://www.uspto.gov/patents-application-process/patent-trial-and-appeal-board/appeals>. The examiner who reviewed the initial application then files an answer to the Board. *Id.* Upon review of the briefs, and after an oral hearing, if granted, the Board issues its decision. *Id.* For a more detailed overview of the ex parte appeals process at the USPTO, see William F. Smith, *An Overview of Ex Parte Patent Appeals in the USPTO*, AM. INTEL. PROP. L. ASS’N (June 15, 2016), http://www.aipla.org/learningcenter/PTABBenchAndBar2016/PTAB%202016%20Bench%20%20Bar%20Conference/Walters_Paper.pdf.

152. *Strijland*, 26 U.S.P.Q.2d at 1263.

153. No. 1992-0624, 24 U.S.P.Q.2d (BNA) 1614 (B.P.A.I. Apr. 2, 1992).

154. Specifically, the Board indicated that software icons might fall within the scope of the article of manufacture requirement:

We have no doubt that the claimed design, like all surface ornamentation-type designs, could be used to ornament a wide variety of articles, including computers. However, the phrase “design for an article of manufacture” in § 171 requires more than a depiction of the surface ornamentation alone. It requires disclosure of the ornamentation applied to or embodied in an article of manufacture. More than an applicant’s generalized intent to ornament some article is required. It is the application of the design to an article which separates mere pictures from a design protectable by a patent.

for an icon for set up operation,"¹⁵⁵ arguing that the icon was "surface ornamentation upon a computer system."¹⁵⁶ This line of argument aimed to establish the computer as the article of manufacture required by § 171.¹⁵⁷ In accord with the logic in *Strijland*, the Board upheld the rejection because the specification failed to "show or describe" Tayama's "claimed design embodied in any article of manufacture."¹⁵⁸ Again, the Board reiterated that "a picture standing alone is not protectable by a design patent."¹⁵⁹ However, similar to *Strijland*, the Board hinted that if Tayama had included the computer in the application, the icon may have been patentable.¹⁶⁰

After witnessing the failures of Xerox, attorneys used the CCPA's holding in *Hruby* to analogize to the characteristics of *Hruby*'s fountain to those of a software icon. In *Ex parte Donoghue*,¹⁶¹ the designer injected the logic of the *Hruby* court—which held that dependency, ephemerality, and permanence do not preclude design patentability—to argue to the Board that the icon design depended upon the computer system that did not need to be disclosed in the application.¹⁶² The Board rejected this argument, distinguishing the claimed icon as a claim of surface ornamentation and the fountain in *Hruby* as an applied design.¹⁶³ Because an icon is a form of surface ornamentation, the ornamentation must, to receive a design patent, be applied to an article of manufacture; Donoghue failed to do so in her application.¹⁶⁴

Without disclosure of an article, the design is not an applied design contemplated for protection under § 171.

Id. at 1617.

155. *Id.* at 1615 n.2.

156. *Id.* at 1617.

157. *Id.*

158. *Id.*

159. *Id.* at 1616.

160. *See id.* at 1616–17.

161. No. 92-0539, 26 U.S.P.Q.2d (BNA) 1266 (B.P.A.I. Apr. 2, 1992).

162. *Id.* at 1270.

163. *Id.* The Board explained the difference between an abstract design and an applied design:

While the design must be *embodied* in some article, the statute is not limited to designs for complete articles, or 'discrete' articles, and certainly not to articles separately sold. . . . Here the design is embodied in the shank portion of a drill and a drill is unquestionably an article of manufacture. It is thus applied design as distinguished from abstract design.

Id. at 1269 (quoting *In re Zahn*, 617 F.2d 261, 268 (C.C.P.A. 1980)).

164. *Id.* (citing 37 C.F.R. § 1.152 to emphasize the requirement that the designer discloses the article of manufacture to which the design is applied).

Following the Board's decisions in *Strijland*, *Tayama*, and *Donoghue*, the USPTO changed course by expanding design patent protection to software icons and by publishing interim guidelines for examining design patent applications for software icons.¹⁶⁵ In response to the Board's concern, the interim guidelines required the designer to include solid lines around the software icon to represent the computer's display, thereby ensuring compliance with the article of manufacture requirement.¹⁶⁶ In 1996, the USPTO finalized its regulations, which are now incorporated into the Manual of Patent Examining Procedure (MPEP) and permit the computer display to be illustrated by either solid or dashed lines.¹⁶⁷ Within the MPEP, the USPTO cites *Hruby* to justify the broadening of the article of manufacture requirement to include software icons.¹⁶⁸ According to the MPEP, "[t]he dependence of a computer-generated icon on a central processing unit and computer program for its existence itself is not a reason for holding that the design is not for an article of manufacture."¹⁶⁹ At issue in *Strijland*, *Tayama*, and *Donoghue* was whether the claimed icon should be viewed as a claim of surface ornamentation or an actual applied design, like the fountain in *Hruby*; however, the USPTO dropped this distinction seemingly without any explanation.¹⁷⁰ Even after the issue of the article of manufacture requirement has been raised in cases before the Board, and ultimately addressed in the MPEP, the Federal Circuit has never heard the question of the scope of design patent eligibility under § 171.¹⁷¹

4. *The Federal Circuit's modern interpretation of the article of manufacture requirement*

Although the Federal Circuit has not ruled on the USPTO's broad interpretation of § 171's article of manufacture requirement, the court

165. See Interim Guidelines for Examination of Design Patent Applications for Computer-Generated Icons, 60 Fed. Reg. 52,170 (Oct. 5, 1995) [hereinafter Interim Guidelines]; see also Seymour & Torrance, *supra* note 88, at 204 (emphasizing that the USPTO "abruptly changed" its design patent application review policy).

166. Interim Guidelines, 60 Fed. Reg. at 52,170.

167. Guidelines for Examination of Design Patent Applications for Computer-Generated Icons, 61 Fed. Reg. 11,380, 11,381 (Mar. 20, 1996); see also MPEP § 1504.01(a) (8th ed. Rev. 7, Sept. 2008).

168. See MPEP § 1504.01(a)(I)(A) (citing *In re Hruby*, 373 F.2d 997, 1001 (C.C.P.A. 1967)).

169. *Id.*

170. See *id.*; see also Seymour & Torrance, *supra* note 88, at 205 (highlighting that neither the guidelines nor the MPEP explain why the distinction was "abandoned").

171. Seymour & Torrance, *supra* note 88, at 203–04 (pointing out the absence of an appeal to the Federal Circuit). For a discussion of more recent district court cases on software icons, see *id.* at 205–06.

has heard at least two cases interpreting similar “manufacture” requirements in related statutes. The first case, *In re Nuijten*,¹⁷² involved the scope of utility patent subject matter under § 101 and was decided in 2007;¹⁷³ the second case, *ClearCorrect Operating, LLC v. International Trade Commission*,¹⁷⁴ involved the jurisdiction of the U.S. International Trade Commission (ITC) under 19 U.S.C. § 1337(a)¹⁷⁵ and was decided in 2015 with its en banc rehearing denied in March 2016.¹⁷⁶

In *Nuijten*, the Federal Circuit decided that a “watermarked” signal does not constitute subject matter for a utility patent, consequently falling outside the scope of § 101.¹⁷⁷ Watermarking is a technique that embeds an electronic signal with additional data.¹⁷⁸ For example, the watermarking technique is used on digital audio files to prevent unauthorized copying.¹⁷⁹ The inventor attempted to patent four types of claims relating to the watermarked signals: (1) the process, (2) the device that performs the process, (3) the storage medium that holds the resulting signals, and (4) the signals themselves.¹⁸⁰ The USPTO granted the first three categories of

172. 500 F.3d 1346 (Fed. Cir. 2007).

173. *Id.* at 1348.

174. 810 F.3d 1283 (Fed. Cir. 2015), *reh'g en banc denied*, 819 F.3d 1334 (Fed. Cir. 2016) (per curiam).

175. *Id.* at 1286. The ITC “is an independent, quasijudicial Federal agency with broad investigative responsibilities on matters of trade.” *About the USITC*, U.S. INT'L TRADE COMM'N, https://www.usitc.gov/press_room/about_usitc.htm (last visited Apr. 28, 2017). Though vital in enforcing a patent-owner's rights against potential international infringers, specific workings of the ITC and its special remedies are outside the scope of this Comment. This Comment looks to the Federal Circuit's interpretation of the term “manufacture” as used within § 337 of the ITC's controlling statute.

176. *ClearCorrect*, 819 F.3d at 1334, 1337.

177. *See Nuijten*, 500 F.3d at 1348. In the wake of the Supreme Court's decision in *Alice Corp. v. CLS Bank International*, 134 S. Ct. 2347 (2014), which expanded the Court's § 101 subject matter test from *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289 (2012), to software patents, it is unclear how the Court would treat the watermarked electronic signal in *Nuijten*. The two-step framework to evaluate patentable subject matter under § 101 has created significant uncertainty in the software world. *See* Rajit Kapur et al., *Certain Uncertainty: The Future of Computer Software Patents*, BANNER & WITCOFF: IP UPDATE (Fall/Winter 2015), <http://documents.lexology.com/23c2aaab-8c47-4964-910a-6bb69dd13809.pdf>.

Certain-Uncertainty.The-Future-of-Computer-Software-Patents.pdf. The court's analysis in *Nuijten*, despite being decided seven years prior to *Alice*, still sheds light on how the court may analyze three-dimensional digital models because the subject matter of *Nuijten* involved a manipulated electronic signal. *See Nuijten*, 500 F.3d at 1348.

178. *Nuijten*, 500 F.3d at 1348.

179. *Id.*

180. *Id.* at 1351.

claims and rejected the fourth claim—the actual watermarked signal.¹⁸¹ First, the Board found that the signal had no “physical attributes,” and the claim solely described its abstract characteristics.¹⁸² Second, the signal did not fall into any of the four categories of patentable subject matter outlined in § 101—“process, machine, manufacture, or composition of matter.”¹⁸³ Third, the Board found that the signal was not a tangible object and thus failed to meet the definition of “manufacture.”¹⁸⁴

In its analysis, the court dealt with the first ground of the Board’s rejection, ruling that the claim should be construed as claiming the signal itself.¹⁸⁵ The court found that the signal had physical attributes and thus was not a claim for solely the abstract characteristics of the signal.¹⁸⁶ Next, the court turned to an analysis of whether the signal fit into the statutory subject matter of § 101.¹⁸⁷ After rejecting the signal as either a process or a machine, the court turned its attention to the category of a manufacture.¹⁸⁸ Upon facing this difficult question, the court examined the Supreme Court’s landmark case interpreting the breadth of § 101, *Diamond v. Chakrabarty*,¹⁸⁹ for guidance on the meaning of “manufacture.”¹⁹⁰ In *Chakrabarty*, the Court interpreted the term “manufacture” (in its verb form) very broadly, citing legislative history and Congress’s use of broad language as evidence that Congress recognized that some “inventions are often unforeseeable.”¹⁹¹ In *Nuijten*, however, the Federal Circuit construed “manufacture” as a noun rather than a verb and defined the term using the same dictionary the Supreme Court used in *Chakrabarty*.¹⁹² Ultimately, the court equated “manufacture,” used in

181. *Id.*

182. *Id.* at 1351–52.

183. *Id.* at 1352 (quoting 35 U.S.C. § 101 (2012)).

184. *Id.*

185. *Id.* at 1353 (quoting *Arrhythmia Research Tech., Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1059 (Fed. Cir. 1992)) (“The view that there is nothing necessarily physical about ‘signals’ is incorrect.”).

186. *Id.* (explaining that a “signal” transports information via some physical carrier).

187. *Id.*

188. *Id.* at 1356.

189. 447 U.S. 303 (1980).

190. *Nuijten*, 500 F.3d at 1356.

191. *Chakrabarty*, 447 U.S. at 308–09, 316 (citing the history of the first Patent Act, including thoughts of the author, Thomas Jefferson, that defined statutory subject matter as “any new and useful art, machine, manufacture, or composition of matter, or any new or useful improvement” (quoting Act of Feb. 21, 1793, ch. 11, § 1, 1 Stat. 318, 319)).

192. *Nuijten*, 500 F.3d at 1356.

noun form, to an “article of manufacture,” and found that the term referred to “tangible articles or commodities.”¹⁹³ Subsequently, while finding the signal physical, the court held that, as defined by the claim, the signals did not comprise a tangible article.¹⁹⁴ Thus, the court found that the claimed signals did not meet the meaning of “manufacture” in § 101.¹⁹⁵

In his concurrence and dissent, Judge Linn raised the issue of a potential contradiction of the majority’s interpretation of “manufacture” in *Nuijten* with the CCPA’s previous interpretation of “article of manufacture” in *Hruby*.¹⁹⁶ Attempting to elucidate the potential contradiction, the majority distinguished *Nuijten* from *Hruby* in a footnote, emphasizing that this interpretation of “article of manufacture” was limited to a utility patent under § 101 and that this case did not affect the “article of manufacture” for the patentability of designs under § 171.¹⁹⁷

The Federal Circuit returned to the term “article” in *ClearCorrect*, interpreting the phrase within 19 U.S.C. § 1337(a) to determine whether the ITC had jurisdiction.¹⁹⁸ This case dealt with importing three-dimensional digital models of orthodontic aligners.¹⁹⁹ Align Technology, Inc. (“Align”) alleged that ClearCorrect Operating (“ClearCorrect”) violated 19 U.S.C. § 1337 (“section 337”) on a theory of patent infringement.²⁰⁰ The orthodontic aligners at issue were designed to incrementally reposition a patient’s teeth.²⁰¹ ClearCorrect scanned patients’ teeth in the United States and sent the three-dimensional models to its Pakistan office, which then created the incremental positioning scheme for the teeth.²⁰² After

193. *Id.*

194. *Id.*

195. *Id.* at 1357.

196. *See id.* at 1358, 1360 (Linn, J., concurring in part, dissenting in part) (arguing that a “signal” is not necessarily transitory and “may last indefinitely”).

197. *Id.* at 1357 n.9 (majority opinion).

198. *ClearCorrect Operating, LLC v. Int’l Trade Comm’n*, 810 F.3d 1283, 1286 (Fed. Cir. 2015), *reh’g en banc denied*, 819 F.3d 1334 (Fed. Cir. 2016) (per curiam) (disagreeing with “[t]he Commission’s decision to expand the scope of its jurisdiction to include electronic transmissions of digital data”).

199. *Id.* at 1287.

200. *Id.* During the litigation, Align alleged infringement of various claims over seven different patents: (1) U.S. Patent No. 6,217,325; (2) U.S. Patent No. 6,705,863; (3) U.S. Patent No. 6,626,666; (4) U.S. Patent No. 8,070,487; (5) U.S. Patent No. 6,471,511; (6) U.S. Patent No. 6,722,880; and (7) U.S. Patent No. 7,134,874. *Id.* at 1287 n.3.

201. *Id.* at 1287.

202. *Id.*

the positioning scheme was complete, the Pakistan office sent the three-dimensional models back to the United States, where employees subsequently printed the models to use to mold the orthodontic aligners.²⁰³ As set by section 337, the ITC's jurisdiction is limited to "unfair acts" involving the "importation of articles."²⁰⁴ Thus, to establish jurisdiction, the ITC had to determine that the three-dimensional digital models constituted an "article" within the meaning of section 337. Accordingly, the ITC determined that the use of "articles" within section 337 included digital data.²⁰⁵

The Federal Circuit reversed the ITC and held that the meaning of "articles" only extends to "material things" and thus does not extend to three-dimensional digital models.²⁰⁶ To determine the meaning of "articles," the court walked through four phases of statutory analysis: first, construing the term in its ordinary meaning; second, turning to the term's use throughout section 337; third, looking at the full statutory scheme; and fourth, examining the statute's legislative history.²⁰⁷ In the first phase of analysis, the court surveyed numerous dictionaries contemporaneous to the passage of section 337's predecessor in which Congress initially used the phrase "articles."²⁰⁸ Upon review of the dictionaries, the court maintained that "articles" meant solely material things, and the term did not extend to intangible articles.²⁰⁹ Consequently, the court concluded that an "article" did not include electronically transmitted three-dimensional digital models.²¹⁰ In the second phase, the court found that the structure of section 337 reinforced the conclusion that Congress

203. *Id.*

204. 19 U.S.C. § 1337(a)(1)(A) (2012); *see also ClearCorrect*, 810 F.3d at 1298–99 (addressing the boundaries of the ITC's jurisdiction by examining the legislative history of the Tariff Act).

205. *See ClearCorrect*, 810 F.3d at 1299 (discussing the ITC's argument "that the use of the word 'commerce' indicates that 'articles' should be read broadly"); *see also* Certain Digital Models, Inv. No. 337-TA-833, USITC Pub. 4555 (May 6, 2013) (Final) (recommending the issue of cease and desist orders to ClearCorrect concerning six infringed patents of Align).

206. *ClearCorrect*, 810 F.3d at 1290.

207. *See id.* at 1290–99.

208. *See id.* at 1291–94.

209. *Id.* at 1293–94.

210. *See id.* (emphasizing that it is "clear that the ordinary meaning of the term 'articles' is 'material things'"). The court surveyed a total of eleven dictionaries during this discussion; these dictionaries included the contemporaneous edition of Webster's at the time the 1922 Tariff Act was passed, industry specific dictionaries, and various editions of *Black's Law Dictionary*. *See id.* at 1291–93, 1298–99.

intended for “articles” to mean material things.²¹¹ Here, the court focused on the exclusionary purpose of section 337.²¹² Because the purpose of the act is to prevent items that infringe intellectual property from entering the United States, the fact that it was impracticable to stop electronic transmission would make the statute unenforceable.²¹³ As a result of this analysis, the court rejected Align’s invitation to read section 337 broadly enough to encompass electronic signals.²¹⁴

The third and fourth phases of analysis continued along the same lines as the initial two. In the third phase of its statutory analysis, the court found no help in the statutory scheme to include a digital model within the meaning of an article.²¹⁵ Whether considering exclusion orders, cease and desist orders, or tariff schedules, the court concluded that each was directed at the regulation of material things and not the transmission of digital data.²¹⁶ Finally, the court examined the legislative history of section 337.²¹⁷ In its decision below, the ITC posited that, because Congress used a variety of words to describe “articles,” the legislative history indicated that the word should be read more broadly than “material things.”²¹⁸ However, the court emphasized that Congress “unambiguously” intended that the meaning of “articles” only extend to “material things.”²¹⁹ The court ultimately concluded that Congress, rather than the ITC, was in a better position to determine what should be included in the statute as an “article.”²²⁰

In a vehement dissent, Judge Newman argued that the majority’s holding was contrary to the purpose of section 337 and conflicted

211. *Id.* at 1294 (rationalizing that “if ‘articles’ had a broader definition, numerous subsections would be rendered inoperative”).

212. *See id.* at 1295.

213. *Id.* (“By way of example, digital transmissions from satellites do not move through border crossings, nor can they be stopped at our borders via any enforcement mechanism contemplated in the statutory scheme.”).

214. *See id.*

215. *See id.* at 1296–98.

216. *See id.*

217. *Id.* at 1298.

218. *See id.* at 1298–99. The ITC pointed out that the words “goods” and “commerce” were used synonymously with the word “articles” within the legislative history. *Id.*

219. *Id.* at 1299 (determining that “articles” does not encompass “electronically transmitted digital data”).

220. *Id.* at 1302. To determine the appropriate deference to give the ITC, the court performed the two-step analysis as outlined in *Chevron v. Natural Resources Defense Council, Inc.*, 467 U.S. 837, 842–44 (1984). *ClearCorrect*, 810 F.3d at 1290, 1299–1300. The court determined it owed no deference to the ITC’s findings. *Id.* at 1301–02.

with binding precedent and other judicial bodies.²²¹ She submitted that the Information Age changed the technology world and that, to serve its statutory purpose, section 337 needed to evolve to facilitate remedies against modern unfair competition.²²² Judge Newman emphasized that section 337 was meant to apply “to all patented technologies, including digital technologies, whatever the path of importation.”²²³ Further, she rejected the tangible limitation on “articles” within the meaning of section 337,²²⁴ contending that Congress could not have intended to omit future technologies it could not foresee when it enacted the statute as well as the majority’s read-in limitation.²²⁵

Following their defeat, Align and the ITC each filed petitions for an en banc rehearing; both petitions were denied.²²⁶ However, the panel’s split, and its fervor, persisted in the denial of the en banc petition for a rehearing.²²⁷

II. VIRTUAL AND AUGMENTED REALITY: THE FEDERAL CIRCUIT'S CRASH COURSE WITH THE TECHNOLOGIES AND THE NEED FOR A BROAD INTERPRETATION OF § 171

The maturity and rapid growth of the VR and AR markets are blurring the lines between the physical and digital words, and more designers in these markets will seek design patent protection. Therefore, whether a three-dimensional digital model constitutes an “article of manufacture” within the meaning of § 171 is likely to become a much-debated topic. Congress’s simplification of the

221. *ClearCorrect*, 810 F.3d at 1304 (Newman, J., dissenting) (“This holding is contrary to Section 337, and conflicts with rulings of the Supreme Court, the Federal Circuit, the Court of Customs and Patent Appeals, the Court of International Trade, the International Trade Commission, the Customs authorities, and the Department of Labor.”).

222. *See id.*

223. *Id.* at 1307.

224. *Id.* at 1308 (“Unquestionably, Congress meant . . . to include under the word ‘articles’ any provided-for substance, material or thing of whatever kind or character that was imported into this country.” (quoting *United States v. Eimer & Amend*, 28 C.C.P.A. 10, 12 (1940))).

225. *Id.*

226. *See ClearCorrect Operating, LLC v. Int’l Trade Comm’n*, 819 F.3d 1334, 1335 (Fed. Cir. 2016) (denying en banc rehearing).

227. *See id.* at 1337 (Newman, J., dissenting). After the Federal Circuit issued its adverse decision, Align and the ITC chose not to seek certiorari at the Supreme Court. Kirk Sigmon et al., *ClearCorrect v. ITC: No Supreme Court Review*, MORRISON & FOERSTER LLP: MoFo @ ITC (Sept. 7, 2016), <http://mofoatitc.mofo.com/federal-circuit-decisions-re-itc/clearcorrect-v-itc-no-supreme-court-review>.

statutory text of § 171 and the CCPA's and USPTO's most recent direct interpretations of § 171's article of manufacture requirement support a broad interpretation of the phrase "an article of manufacture" that includes three-dimensional digital models.²²⁸ Based on this interpretation, the USPTO should grant design patents to three-dimensional digital models.²²⁹ In two recent cases, however, the Federal Circuit has signaled a narrowing of the scope of the "article of manufacture" language and has explicitly excluded electronic and digital technologies.²³⁰ While the court arguably respects the plain language meaning of these terms at the time Congress enacted these statutes, its refusal to expand the scope of the article of manufacture requirement does so at the expense of congressional intent evidenced by the design patent statute's legislative history.

A. The Federal Circuit Has Signaled a Limitation on Statutory Subject Matter by Adopting a Narrow Meaning of an "Article of Manufacture" in a Statute Related to the Design Patent Statute

In its two most recent decisions interpreting the phrase "article of manufacture," the Federal Circuit has signaled a much narrower view than that held by its predecessor court—the CCPA—and the USPTO.²³¹ In *Nuijten*, the court indicated that it holds a narrow view of the definition of an article of manufacture.²³² In *ClearCorrect*, the Federal Circuit confirmed this view, holding the same limited view of

228. See *infra* Sections II.A–B (explaining the furtherance of an inclusive subject matter policy in § 171 of the design patent statute from overall simplification of the article of manufacture requirement, legislative history, and case law).

229. See *infra* Section II.C.

230. See *ClearCorrect*, 810 F.3d at 1299 (refusing to include three-dimensional digital models within the meaning of an "article of manufacture"); *In re Nuijten*, 500 F.3d 1346, 1357 (Fed. Cir. 2007) (refusing to include watermarked electronic signals within the meaning of an "article of manufacture"); *infra* Section II.A (acknowledging the Federal Circuit's limited holding of "articles of manufacture" to the physical realm).

231. See *In re Hruby*, 373 F.2d 997, 1001–02 (C.C.P.A. 1967) (finding a broad view of an article of manufacture); MPEP § 1504.01(a) (9th ed. Rev. 7, Nov. 2015) (permitting design patents for software icons); see also *infra* Sections II.C.2–3 (discussing the change in the USPTO and courts' interpretation of an article of manufacture).

232. See *supra* text accompanying notes 186–95 (identifying the Federal Circuit's limitation of the definition of "manufacture" when analyzing whether a watermarked electronic signal is patentable subject matter under § 101).

an article of manufacture as in *Nuijten*.²³³ Further, *ClearCorrect* continues to evince the court's willingness to limit the definition of an article of manufacture to the physical world.²³⁴

1. *The narrow definition of "manufacture" in In re Nuijten*

The Federal Circuit departed from a broad reading of the article of manufacture requirement in *Nuijten*.²³⁵ In *Nuijten*, the court narrowed the definition of a "manufacture" in its interpretation of § 101, the same statutory provision that the Supreme Court interpreted in *Chakrabarty*.²³⁶ Because it interpreted "manufacture" in § 101 to be a noun, the court denied patent protection for a watermarked electrical signal because the signal was "fleeting"; "devoid of any semblance of permanence"; and dependent on a machine to be "perceived."²³⁷ Given the close relationship between § 101 and § 171 and the Federal Circuit's willingness to import meanings derived from the utility patent statute into the design patent statute, the court could import the narrowed meaning of manufacture into its interpretation of § 171.²³⁸

The characteristics of *Nuijten*'s electronic signal that the court identified as precluding utility patentability are similar to the characteristics of the *Hruby* fountain, which the CCPA upheld as patentable. Specifically, the Federal Circuit described *Nuijten*'s electronic signal as "fleeting," "devoid of any semblance of permanence," and dependent on a machine to be "perceived,"²³⁹ while the CCPA described the particles that made up *Hruby*'s fountain as "fleeting," and found that the fountain itself lacked "permanence" and was "dependen[t]" on the flow of water.²⁴⁰ Despite these similar characteristics, however, the two courts did not

233. See *infra* Section II.A.2 (discussing the court's determination that a three-dimensional model did not meet the definition of "article" under the statute).

234. *ClearCorrect*, 810 F.3d at 1286 (concluding that "articles" means "material things" and that any expansion of this interpretation should be left to Congress).

235. See *supra* Section I.C.4 (providing an overview of the Federal Circuits decision in *Nuijten* and emphasizing the court's departure from the Supreme Court's interpretation of patentable subject matter set by § 101).

236. See *In re Nuijten*, 500 F.3d 1346, 1356 (Fed. Cir. 2007).

237. See *id.* at 1356–57; *supra* text accompanying notes 190–93 (explaining the decision to read "manufacture" as a noun rather than a verb to narrow the definition of the term).

238. See *Int'l Seaway Trading Corp. v. Walgreens Corp.*, 589 F.3d 1233, 1238 (Fed. Cir. 2009) (noting that courts have interpreted the requirements of design patents in line with those of utility patents).

239. *Nuijten*, 500 F.3d at 1356–57.

240. *In re Hruby*, 373 F.2d 997, 999 (C.C.P.A. 1967).

come to the same conclusions. While the CCPA in *Hruby* held that tangibility, dependence, and permanence did not preclude a design from patentability, the Federal Circuit in *Nuijten* held that these characteristics did preclude patentability.²⁴¹

Judge Linn, in his concurrence and dissent in *Nuijten*, pointed out the inconsistency of the Federal Circuit's decision to interpret the word "manufacture" in the utility patent context differently than it had in the design patent context in *Hruby*.²⁴² He stated that, "In *In re Hruby*, we held that it was not the dynamic position of any given water droplet, but rather the overall pattern, that was patentable; likewise, here, it is the overall signal, not the physical manifestation of a single bit, that constitutes the invention."²⁴³ To counter Judge Linn's point, the majority argued that because requirements for patentability differed in the utility and design realms, there would not be a contradiction issue.²⁴⁴ Nevertheless, the court appears to ignore the fact that the requirements for patentability—novelty, obviousness, and subject matter—are independent from each other.²⁴⁵ Consequently, because the design and utility patent statutes have an independent subject matter requirement that includes the word "manufacture," it is immaterial to point out that there are other, dissimilar requirements.²⁴⁶ The court's jurisprudence, which imports utility patent concepts and interpretations into the design patent statute, further underscores the argument that the limited meaning of "manufacture" could likely be imported into the interpretation of § 171.²⁴⁷

Because of § 171's language subjecting it to other "conditions and requirements" of Title 35, the Federal Circuit has freely imported the statutory interpretation of utility patent requirements into the

241. See *id.* at 999–1001; *supra* text accompanying notes 128–35 (examining the CCPA's reasoning for not finding these factors dispositive in determining whether a design was patentable under § 171).

242. See *Nuijten*, 500 F.3d at 1360 (Linn, J., concurring in part, dissenting in part).

243. *Id.* (citation omitted).

244. *Id.* at 1357 n.9 (majority opinion) ("*Hruby* dealt with a 35 U.S.C. § 171 design patent for an aesthetically pleasing water fountain rather than a § 101 utility patent, and is therefore of limited applicability to this case. The subject of a design patent need not have any practical utility. Compare § 101 ('new and useful'), with § 171 ('new . . . and ornamental').").

245. See Seymour & Torrance, *supra* note 88, at 199 (identifying the inconsistency between the majority's statement in footnote nine and the statutory requirements for design patentability).

246. See 35 U.S.C. §§ 101, 171 (2012); Seymour & Torrance, *supra* note 88, at 199.

247. See *supra* Section I.B.2.a (identifying the courts' willingness to import utility patent statutory provisions into interpretations of design patent law).

requirements for design patentability.²⁴⁸ Thus, given the similarity of the wording between the subject matter requirements for design and utility patents, the design patent statute's grant permitting the importation of utility patent requirements, and the court's history of actually importing these requirements, it is extremely likely that, given the invitation, the Federal Circuit would import *Nuijten*'s manufacture requirement into the design patent statute. This importation would necessarily overturn *Hruby*.²⁴⁹

There are many similarities between the watermarked signal in *Nuijten* and a three-dimensional digital model used in VR and AR technologies. Both three-dimensional digital models and watermarked signals are purely electronic, exist temporarily, and depend on some other device to exist.²⁵⁰ Thus, assuming the court would not distinguish an electronic signal and a three-dimensional digital model, a three-dimensional model would fail to be patentable if the court imported the interpretation of a manufacture from *Nuijten* into the meaning of design patent's § 171.

2. *The Federal Circuit's adherence to the limited definition of "manufacture" in ClearCorrect Operating, LLC v. International Trade Commission*

In *ClearCorrect*, its most recent opinion interpreting the phrase "article of manufacture," the Federal Circuit maintained its narrow view from *Nuijten*.²⁵¹ The dental models in *ClearCorrect* are the closest analogous subject matter to the types of digital models that are found in the VR and AR worlds.²⁵² Through its analysis, the court undertook a lengthy, four-part statutory interpretation, ultimately resulting in a narrow definition of the word "articles" that excluded

248. See, e.g., *Int'l Seaway Trading Corp. v. Walgreens Corp.*, 589 F.3d 1233, 1238 (Fed. Cir. 2009) (importing legal holdings from utility patent law).

249. See *infra* Section II.C.1 (describing how the decision in *Hruby* would permit a three-dimensional digital model to be considered an article of manufacture).

250. See *In re Nuijten*, 500 F.3d 1346, 1348–49 (Fed. Cir. 2007) (outlining the characteristics of a watermarked signal); *supra* text accompanying notes 242–47 (emphasizing that the reasons the Federal Circuit found the watermarked electronic signal to not be patentable were almost identical to the reasons that the CCPA, the Federal Circuit's predecessor, rejected as dispositive for design patentability).

251. See *ClearCorrect Operating, LLC v. Int'l Trade Comm'n*, 810 F.3d 1283, 1302 (Fed. Cir. 2015), *reh'g en banc denied*, 819 F.3d 1334 (Fed. Cir. 2016) (per curiam).

252. The three-dimensional models at issue in *ClearCorrect* were actual scans of a patient's teeth. See *id.* at 1286–87; *supra* text accompanying notes 201–03. These scans were accurate enough to be 3D printed into physical models, underscoring the detail of the model. See *ClearCorrect*, 810 F.3d at 1287. Because of the quality, these models are very similar to VR and AR three-dimensional digital models.

three-dimensional digital models.²⁵³ However, the court was not unanimous: Judge Newman wrote a vigorous dissent in that case and also dissented to the denial of a rehearing en banc.²⁵⁴ Still, the majority's limited definition of an article of manufacture was consistent with the narrow view outlined in *Nuijten*, ultimately showing that the court would continue to adhere to the interpretation excluding digital media.²⁵⁵

The court in *ClearCorrect* interpreted the Section 337 use of "articles" as limited to tangible, material things; however, the analysis strictly adhered to the understanding of technology and products of the early twentieth century. The court unnecessarily restricted itself to a century-old understanding of the meaning of "articles" as outlined in dictionaries and tariff schedules.²⁵⁶ As a result, the court ignored Congress's intent in passing the statute, which was to provide an additional safeguard against unfair competition by imports; instead, the court focused on the practicability of enforcing a ban on importation of intangible, digital media.²⁵⁷ With the emphasis on tangibility, it is unsurprising that dictionaries from the early twentieth century supported the court's narrow view; the advancement of electronic and digital technologies, which expanded society's awareness of intangible commerce, was obviously unforeseen at that time.²⁵⁸ Underscoring this point, as Judge Newman emphasized in her dissent, the Supreme Court has held that when interpreting statutes that were passed before the Information Age, the courts "must read the statutory language . . . in the light of drastic technological change."²⁵⁹ When read in this light, courts should apply a broader view of the term "articles," which would include three-dimensional digital models.

253. See *ClearCorrect*, 810 F.3d at 1299.

254. *Id.* at 1304 (Newman, J., dissenting); *ClearCorrect*, 819 F.3d at 1337; see also text accompanying notes 221–25 (reviewing Judge Newman's dissent including her belief that the court was departing from prior rulings of numerous judicial and administrative bodies).

255. See *ClearCorrect*, 810 F.3d at 1302; *Nuijten*, 500 F.3d at 1357.

256. See *supra* note 210 (noting that the court consulted dictionaries contemporaneous with the Tariff Act).

257. See *ClearCorrect*, 810 F.3d at 1295 (stating that "digital transmissions from satellites do not move through border crossings, nor can they be stopped at our borders via any enforcement mechanism contemplated in the statutory scheme").

258. See *id.* at 1308 (Newman, J., dissenting) ("It cannot have been the legislative intent to stop the statute with the forms of 'article' then known.").

259. *Id.* at 1306 (quoting *Fortnightly Corp. v. United Artists Television, Inc.*, 392 U.S. 390, 396 (1968)).

Further, as Judge Newman pointed out in her dissent to the decision denying the rehearing en banc, the Federal Circuit's stance on an article of manufacture counters the reading of the term in patent law.²⁶⁰ In passing Section 337, Congress aimed to protect domestic industry by safeguarding against unfair competition from imports that infringe upon U.S. intellectual property rights, including patents.²⁶¹ Thus, when interpreting the term "article" in Section 337, the Federal Circuit should have maintained a reading consistent with the interpretation of the term in the utility patent statute. Based on the limited definition of manufacture that the Federal Circuit adopted in *Nuijten*, which rejected a watermarked electronic signal as patentable subject matter, the court did just that: it continued to read the term in a more limited light.²⁶² However, as discussed earlier, in *Chakrabarty*, the Supreme Court established its broad, inclusive view of utility patentable subject matter.²⁶³ The Court explained that "Congress is free to amend" the patent statute, insofar as to limit any subsequent interpretation by the courts.²⁶⁴ Contrary to the Supreme Court's reading, the Federal Circuit in *ClearCorrect*, acknowledging that the last revision of Section 337 occurred prior to the creation of the Internet, stated the opposite of the Supreme Court: "Congress is in a far better position to draw the lines" of what should be included in the meaning of articles within Section 337.²⁶⁵ Therefore, even though it did not interpret the patent statute directly, the Federal Circuit still severely limited a remedial option available to patentees.

ClearCorrect, which involved a three-dimensional digital model, is the case most analogous to a design patent dispute involving a model found in VR or AR. While it is possible to argue that the *ClearCorrect* court's decision is only applicable to the meaning of an article within

260. See *ClearCorrect Operating, LLC v. Int'l Trade Comm'n*, 819 F.3d 1334, 1338–40 (Fed. Cir. 2016) (Newman, J., dissenting) (per curiam) ("It is established that digital products are 'goods' and 'merchandise' and that their transmission via the Internet is an importation into the United States. It is established that digital goods are subject to the patent law. No authority has held that infringing digital goods that are imported electronically are not subject to the laws of infringement or of importation.").

261. See *Suprema, Inc. v. Int'l Trade Comm'n*, 796 F.3d 1338, 1350–51 (Fed. Cir. 2015) (finding that Congress intended the scope of Section 337 to be broad).

262. See *ClearCorrect*, 810 F.3d at 1286 (rejecting the broad interpretation of the term "articles").

263. *Diamond v. Chakrabarty*, 447 U.S. 303, 318 (1980) (discussing an inclusive subject matter interpretation of § 101).

264. *Id.*

265. *ClearCorrect*, 810 F.3d at 1302 (quoting *Bayer AG v. Housey Pharm., Inc.*, 340 F.3d 1367, 1376–77 (Fed. Cir. 2003)).

the ITC's jurisdictional statute, this seems increasingly doubtful because of the court's view of an electronic signal in *Nuijten*.²⁶⁶ Thus, based on *ClearCorrect* and *Nuijten*, it is unlikely that upon hearing a case directly interpreting the term "article of manufacture" within § 171, the Federal Circuit would expand this position. In fact, it is more likely that the court imports *Nuijten*'s interpretation of § 101 into § 171, overruling CCPA's *Hruby* decision and ending the USPTO's practice of granting design patents for software icons.

B. The Changes in the Design Patent Statute Allude to a Broad Interpretation

Based on the text of § 171, its legislative history, as well as how the courts have incorporated the interpretations of the utility patent statute into design patent law, the Federal Circuit should adopt a broad view of the article of manufacture requirement. A textual analysis of § 171 supports a broad interpretation of the article of manufacture requirement. The statute currently requires that a design merely be "for an article of manufacture."²⁶⁷ This broad language demonstrates the statute's comprehensive scope.²⁶⁸

Further, the consistent simplification of the statutory language reflects Congress's preference for an inclusive patent subject matter policy.²⁶⁹ Over a period of sixty years, Congress repeatedly simplified the language of § 171 from narrow, enumerated categories to broad, general language including "any" and "manufacture."²⁷⁰ This legislative history further indicates that Congress rejected a narrow interpretation of the article of manufacture requirement.

Finally, the broad interpretation of the analogous utility patent provision § 101 also supports a broad interpretation of the design patent provision § 171. In *Chakrabarty*, for instance, the Supreme Court construed § 101 and emphasized that, by choosing words like "any" and "manufacture," Congress intended for courts to read § 101

266. See *supra* Section II.A.1 (analyzing the implications of the Federal Circuit's interpretation of a watermarked electronic signal).

267. 35 U.S.C. § 171 (2012).

268. *In re Schnell*, 46 F.2d 203, 206 (C.C.P.A. 1931) ("The proposed statute removes all this specific statement, for the reason that as the statute stands it does not include all the subjects which ought to be included, and from the inclusion of a portion it suggests the non-inclusion of those not mentioned." (quoting USPTO Comm'r Allen in a letter to Congress supporting the 1902 amendments)).

269. See *id.* at 205–06.

270. See *supra* Section I.C.1 (providing an overview of the history of § 171's changing language).

broadly.²⁷¹ It also found ample support in § 101's legislative history supporting this view.²⁷² The incorporation of these utility patent provisions into § 171 therefore stems from § 171's wording and legislative history because § 171 is "subject to the conditions and requirements of [Title 35]."²⁷³ Moreover, Congress's preference for an inclusive subject matter policy in § 171 is in accord with the Court's interpretation of § 101.²⁷⁴ The language of § 171 and § 101 uses similarly expansive terms such as "any" and "manufacture."²⁷⁵ Thus, like the language and legislative history of § 101, the language and legislative history of § 171 allude to an inclusive, broad reading.²⁷⁶ Further, the courts have previously looked to the utility patent statute to justify broadly construing other terms in § 171. This practice of incorporating § 101 to set the boundaries of § 171 should therefore make the Federal Circuit feel comfortable continuing that trend and establishing a broad interpretation of § 171's article of manufacture requirement.

Thus, because of the choice of language in the statute, the legislative history of § 171, and the tradition of incorporating analogous provisions of the utility patent statute, the Federal Circuit should read the statutory language "article of manufacture" broadly.

C. Applying the Broad Interpretation of § 171

1. The Hruby view of an article of manufacture includes three-dimensional digital models

When the CCPA adopted a broad interpretation of § 171 in *Hruby*, it provided a helpful framework to analyze three-dimensional digital

271. *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980) ("In choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by the comprehensive 'any,' Congress plainly contemplated that the patent laws would be given wide scope.").

272. *Id.* at 308–09 (citing the early history of the first Patent Act of 1793, including thoughts of the author, Thomas Jefferson, that defined statutory subject matter as "any new and useful art, machine, manufacture, or composition of matter, or any new or useful improvement" (quoting Act of Feb. 21, 1793, ch. 11, § 1, 1 Stat. 318, 319)); *supra* notes 191–93 and accompanying text (discussing the Supreme Court's view in *Chakrabarty*).

273. 35 U.S.C. § 171 (2012); *see supra* Section I.B.2(a) (recognizing the courts' importation of utility patent statutory provisions into design patent law).

274. *See Chakrabarty*, 447 U.S. at 308–10 (discussing an inclusive view of patentable subject matter based on its interpretation of § 101).

275. 35 U.S.C. § 171.

276. *See In re Schnell*, 46 F.2d 203, 205–06 (C.C.P.A. 1931).

models. Specifically, the *Hruby* court considered the design's permanence, tangibility, and dependence.²⁷⁷

Patentability hinges on the ordinary observer's perception of the three-dimensional model, not whether the virtual design itself is tangible.²⁷⁸ Just as the fountain in *Hruby* ends when the water flow stops, a three-dimensional model in the virtual world ceases to exist when the computer acting as the engine of the virtual world is shut down. However, the ephemerality of the design should not limit its ability to be protected.²⁷⁹ "Presence" within the VR and AR worlds allows for the creation of an environment that an observer's mind considers reality.²⁸⁰ Accordingly, while the VR or AR technology is in use, an observer views a three-dimensional model as if it constantly appeared, much like the fountain in *Hruby* had a "constant" appearance.²⁸¹ Hence, a three-dimensional model should not be precluded from design patent protection just because it only exists while in use. Further, a three-dimensional model's dependence on a computer engine should not exclude the model from being considered an article of manufacture. Just like the fountain in *Hruby* depended on water flow to operate, a three-dimensional model depends on the computer that generates it. Moreover, the CCPA in *Hruby* explicitly held that dependency does not preclude a design from being considered an article of manufacture under § 171.²⁸² Accordingly, the fact that a three-dimensional digital model is dependent on the computer should not preclude it from being considered an article of manufacture and receiving design patent protection.

277. *In re Hruby*, 373 F.2d 997, 999–1001 (C.C.P.A. 1967); see *supra* text accompanying notes 124–36.

278. Cf. Seymour & Torrance, *supra* note 88, at 197 (discussing the holding of *Hruby* and emphasizing that the CCPA focused on "the perception of a design . . . not whether the design is comprised of tangible, solid matter").

279. See *Hruby*, 373 F.2d at 999 (rejecting the proposition that the temporary nature of the droplets in a fountain should be a bar to design patentability, agreeing that "[i]t is true that a particular droplet or droplets may be 'a fleeting product[.]' but the fountain . . . in its entirety under proper conditions presents a product of constant appearance rather than a fleeting product" (citation omitted)).

280. See *supra* notes 43–45 and accompanying text (emphasizing that VR devices now create "presence," which deceives the user's mind into believing the environment is real and not controlled by outside computer technology).

281. See *Hruby*, 373 F.2d at 999.

282. See *id.* at 1001; see also *supra* note 135 (providing examples of other designs that had been granted design patent protection despite being dependent on other materials).

Including three-dimensional models in the scope of § 171 does not alter the test for design patent infringement. Design patent infringement is judged from the perspective of an “ordinary observer.”²⁸³ The test evaluates whether a purchaser would find substantial similarities between a protected design and the alleged infringing design.²⁸⁴ Therefore, if an ordinary observer would view the three-dimensional digital model and confuse it with a protected design, then it is possible to find infringement even though the infringing object is a digital model rather than a physical object.²⁸⁵

Furthermore, the size and mobility of a design do not affect whether the design constitutes an article of manufacture within the meaning of § 171.²⁸⁶ The *Hruby* court and, prior, the *Hadden* court, underscored what constitutes an article of manufacture and clarified that size and mobility should not restrict this definition.²⁸⁷ Thus, a three-dimensional digital model should not be blocked from design patent protection simply because it does not have a physical size and is not physically mobile.

2. *The USPTO has adopted the Hruby court’s view and should issue patents for three-dimensional digital models that are present in VR and AR*

The USPTO expanded the meaning of an article of manufacture to include software icons, adopting the *Hruby* court’s broad view of patentability.²⁸⁸ As technology has progressed, the software industry has shifted away from programming three-dimensional models for display on the computer screen towards creating environments in the VR and AR worlds.²⁸⁹ Thus, because the USPTO has already shown that it wants to protect new technologies by adopting the *Hruby* court’s

283. See *Gorham Co. v. White*, 81 U.S. 511, 528 (1871) (establishing the test for design patent infringement); see also 35 U.S.C. § 289 (2012) (enumerating the statutory requirement to bring a design patent infringement suit).

284. *Gorham*, 81 U.S. at 528.

285. The success of the Oculus Rift and its ability to create “presence” further bolsters this point. See Lang, *supra* note 43 (discussing achieving “presence” in virtual reality); *supra* notes 41–45 and accompanying text (underscoring the effect that achieving “presence” has had on the commercial success of the Oculus).

286. See *In re Hadden*, 20 F.2d 275, 276 (D.C. Cir. 1927); see also *Hruby*, 373 F.2d at 1000 (reaffirming the *Hadden* court’s statement on size and mobility requirements).

287. See *Hruby*, 373 F.2d at 1000; *Hadden*, 20 F.2d at 276.

288. See MPEP § 1504.01(a)(I)(A) (9th ed. Rev. 7, Nov. 2015) (citing *Hruby*, 373 F.2d at 1001); *supra* notes 165–71 and accompanying text (chronicling the USPTO’s recognition of software icons as patentable designs under § 171).

289. See *supra* Section I.A (providing an overview of the history and development of VR and AR technologies).

view, it should follow this next progression of technology and explicitly permit design patents to issue for three-dimensional digital models.

It is irrelevant that the three-dimensional model does not appear directly on the computer screen like the permitted software icon. As the Board at the USPTO decided in *Strijland*, *Tayama*, and *Donoghue*, a software icon would be supported only if it was an ornamentality “for an article of manufacture.”²⁹⁰ Thus, the USPTO eventually granted design patent protection for software icons if the claim included an outline around the icon representative of the computer screen.²⁹¹ The USPTO’s view of the computer icon as being an ornamentality “for an article of manufacture” should not apply to three-dimensional models. Because the VR and AR technologies’ achievement of “presence” has blurred the lines between the digital and the physical worlds, it is no longer necessary to distinguish when an object appears on a computer screen by using solid or dashed lines around the claimed digital design.²⁹²

The USPTO should grant design patent protection without requiring use of a solid or dashed line around the claim because, while a three-dimensional model is a digital design, it is different from a software icon. The key difference between the two is that a software icon itself exists on a computer screen or as part of a software program, making it unclear how the icon is displayed without providing the context of the computer screen.²⁹³ Unlike a software icon, a three-dimensional model does not need context for the user to understand how the model is displayed because the model is presented as part of physical reality, not a computer screen. Therefore, the USPTO should continue to use the broad view of the *Hruby* court and grant protection to three-dimensional digital models.

CONCLUSION

The Federal Circuit should abandon the recently adopted line of reasoning interpreting an article of manufacture as a physical,

290. See *Ex parte* Donoghue, No. 92-0539, 26 U.S.P.Q.2d (BNA) 1266, 1268 (B.P.A.I. Apr. 2, 1992); *Ex parte* Strijland No. 92-0623, 26 U.S.P.Q.2d (BNA) 1259, 1261 (B.P.A.I. Apr. 2, 1992); *Ex parte* Tayama, No. 92-0624, 24 U.S.P.Q.2d (BNA) 1614, 1615 (B.P.A.I. Apr. 2, 1992); *supra* Section I.C.3 (documenting the history of appeals leading to software icons being recognized as design patentable subject matter).

291. See MPEP § 1504.01(a)(I)(A).

292. See *supra* Section I.A.2 (illustrating the maturity of the VR and AR technologies through the achievement of “presence” and, as a result, the blurring of the physical and digital worlds).

293. See *supra* text accompanying notes 148–52.

tangible object in the utility patent and ITC jurisdictional statutes. In its most recent interpretation of § 171, the Federal Circuit's predecessor court, the CCPA, broadened the definition of an article of manufacture to include a fountain, an object that is dependent on a machine to run, ephemeral, and transient.²⁹⁴ This expansion is in accord with the simplification of § 171, which moved from enumerated categories of subject matter to a much broader wording.²⁹⁵ Just as the USPTO expanded design patent subject matter to include software icons, the court should interpret articles of manufacture to include three-dimensional digital models. The inclusion of digital models will allow designers who are developing items for use in VR and AR worlds, as well as those designers whose items already exist in the physical world, to fully protect their intellectual property rights thus ensuring that statutory structure keeps pace with the boom in VR and AR technologies. Without abandoning its current course, the Federal Circuit's narrow interpretation puts design patent protection of these new technologies at risk.

294. See *In re Hruby*, 373 F.2d 997, 999 (C.C.P.A. 1967).

295. See *Seymour & Torrence*, *supra* note 88, at 192.