

ValpoScholar

Valparaiso University Law Review

Volume 51
Number 3 Spring 2017

pp.651-694

Spring 2017

Dude, Where's My Patient?: Illegality, Morality, and the Patentability of Marijuana

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Recommended Citation

Manuela Cabal Carmona, *Dude, Where's My Patient?: Illegality, Morality, and the Patentability of Marijuana*, 51 Val. U. L. Rev. 651 (2017).

Available at: <https://scholar.valpo.edu/vulr/vol51/iss3/5>

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DUDE, WHERE'S MY PATENT?: ILLEGALITY, MORALITY, AND THE PATENTABILITY OF MARIJUANA

"[A] country without a patent office and good patent laws [is] just a crab, and [cannot] travel any way but sideways or backways."—Mark Twain

I. INTRODUCTION

Ben Holmes is a "cannabis seed geek."¹ After leaving a securities analyst position at Merrill Lynch, Holmes became a self-taught scientist, engineer, and botanist dedicated to developing high-quality cannabis seeds.² Holmes' most prized invention is the Otto II, a medical-grade marijuana strain.³ In January 2015, Holmes filed a plant patent application to protect his Otto II strain and, if awarded, Holmes's patent covering the Otto II would be the first plant patent issued protecting a cannabis strain.⁴

As the marijuana industry continues to grow rapidly, marijuana entrepreneurs are concerned large companies seeking to capitalize on marijuana will enter the industry, steal their intellectual property, and take away their market.⁵ Accordingly, as states legalize marijuana for

¹ Jason Blevins, *Pot Growers Cultivating in the Shadows Seek U.S. Patent Protection*, DENVER POST (Dec. 19, 2014), <http://www.denverpost.com/2014/12/19/pot-growers-cultivating-in-the-shadows-seek-u-s-patent-protection/> [<https://perma.cc/HB37-DFNG>]. Most recently, the United States Patent and Trademark Office ("USPTO") issued the "first-ever patent for a plant containing significant amounts of THC[.]" Greg Walters, *What a Looming Patent War Could Mean for the Future of the Marijuana Industry*, VICE NEWS (Apr. 20, 2016), <https://news.vice.com/article/a-patent-for-cannabis-plants-is-already-a-reality-and-more-are-expected-to-follow> [<https://perma.cc/C6HK-MRBP>]. Cannabidiol ("CBD") is marijuana's major non-psychoactive ingredient, while tetrahydrocannabinol ("THC") is the plant's psychoactive compound. *Id.* CBD has been credited with having antipsychotic effects. *Id.* U.S. Pat. No. 9,095,554 ("554 Patent"), which was issued August 4, 2015, "relates to specialty cannabis plants, compositions and methods for making and using said cannabis plants and compositions derived thereof." U.S. Pat. No. 9,095,554 (Mar. 17, 2014). The '554 Patent is a utility patent, whereas the patent Ben Holmes seeks is a plant patent. *Id.*

² See Blevins, *supra* note 1 (telling the story of Ben Holmes, a "self-taught scientist, engineer, farmer[,] and cannabis seed geek" who is applying to obtain the first patent protecting a marijuana strain).

³ See *id.* (indicating Holmes's Otto II is a "high-CBD, low-THC strain" that could "fuel medical therapies").

⁴ *Id.*

⁵ See Matt Ferner, *Legal Marijuana Is the Fastest-Growing Industry in the U.S.: Report*, HUFFINGTON POST (Jan. 26, 2015), http://www.huffingtonpost.com/2015/01/26/marijuana-industry-fastest-growing_n_6540166.html [<https://perma.cc/S99X-EQ7Z>] ("[L]egal marijuana is the fastest-growing industry in the [United States] . . ."). In fact, the marijuana industry was a \$2.7 billion market in 2014, growing 74 percent from 2013. *Id.* If the trend towards legalization continues, it could become more lucrative than the National Football League ("NFL") industry by 2020. Christopher Ingraham, *The Marijuana Industry*

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medical or recreational use, marijuana entrepreneurs become increasingly interested in seeking intellectual property protection.⁶ Specifically, entrepreneurs are interested in patent protection.⁷ However, marijuana remains illegal under federal law, and because patent law is established under federal law, attorneys do not know whether the United States

Could Be Bigger Than the NFL by 2020, WASH. POST (Oct. 24, 2014), <http://www.washingtonpost.com/news/wonkblog/wp/2014/10/24/the-marijuana-industry-could-be-bigger-than-the-nfl-by-2020/> [https://perma.cc/VZ48-23BE]. See also Lisa Shuchman, *Roll Another Pot Patent (For the Road)*, CORP. COUNSEL (Apr. 1, 2015), <http://www.corpcounsel.com/id=1202722064373/Roll-Another-Pot-Patent-40For-the-Road41> [https://perma.cc/9YVW-Z2Q6] (explaining marijuana entrepreneurs, such as Holmes, believe patenting their marijuana strain is important to prevent intellectual property theft and facilitate licensing); Blevins, *supra* note 1 (quoting Chad Ruby, the Chief Operating Officer (“COO”) of United Cannabis Corp., a publicly-traded corporation based in Denver, Colorado that has filed for draft patents on ratios of cannabinoids: “We don’t want to waste a bunch of time and a bunch of money and a bunch of effort only to have someone take all our work”). Holmes, who has experience in the financial sector, explained if intellectual property protection is available, large companies, once a “big cannabis industry develops,” will not be able to abuse the small breeders and producers and instead will “buy up the little ones.” Shuchman, *supra* note 5. Large pharmaceutical companies have already shown an interest in the marijuana industry’s potential. *Id.* For example, GW Pharma Ltd., a U.K.-based pharmaceutical company, is “one of the most active seekers of patents for cannabis plants, extracts or formulations” *Id.* Tobacco companies are also expected to become interested in the marijuana industry because they “already have the infrastructure needed to grow marijuana plants” on a large scale. *Id.* Furthermore, according to industry watchers, companies like Monsanto, Altria Group, Pfizer, Walgreens, and Anheuser-Busch Indiana Beverage are expected to become interested in the marijuana market’s potential. Blevins, *supra* note 1.

⁶ See *State Medical Marijuana Laws*, NAT’L CONF. OF ST. LEGIS. (Oct. 16, 2015), <http://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx> [https://perma.cc/EL7R-T5FS] (discussing state medical marijuana laws and noting twenty-three states, the District of Columbia, and Guam have laws permitting medical marijuana programs); see also Chris Boyette & Jacque Wilson, *It’s 2015: Is Weed Legal in Your State?*, CNN (Jan. 7, 2015), <http://www.cnn.com/2015/01/07/us/recreational-marijuana-laws/> [https://perma.cc/GXB8-FVXN] (stating four states—Washington, Colorado, Alaska, and Oregon—and Washington D.C. have legalized recreational use of marijuana); Blevins, *supra* note 1 (quoting Ben Holmes: “[W]ith companies forming and making larger investments, the desire to protect intellectual property is becoming paramount. Bleeding-edge stuff, right here.”); Shuchman, *supra* note 5 (describing the marijuana industry’s desire to obtain intellectual property protection and noting it is unclear whether the USPTO will issue patents on pending marijuana-related applications, such as the one filed by Ben Holmes).

⁷ See *supra* note 5 and accompanying text (highlighting the reasons marijuana entrepreneurs are interested in patent protection, including entrepreneurs’ concerns that they will not be able to protect their small businesses from large companies entering the marijuana industry and stealing market share unless they have patent protection); see also Amanda Ciccattelli, *Patent Protection for Marijuana Plants Is the “Holy Grail” of the Marijuana Industry*, INSIDE COUNS. (June 17, 2016), <http://www.insidecounsel.com/2016/06/17/patent-protection-for-marijuana-plants-is-the-holy> [https://perma.cc/SEB7-WL2A] (noting that obtaining a patent protecting a marijuana strain is the “holy grail” of the marijuana industry).

Patent and Trademark Office (“USPTO”) will issue patents protecting strains of cannabis.⁸ Hence, it is unclear whether Holmes will be able to obtain a plant patent protecting his Otto II strain.⁹

This Note considers what role, if any, illegality should play in a determination of patentable utility by examining the patentable utility of marijuana strains and marijuana-related inventions.¹⁰ The Note proposes illegality should not affect the patentable utility of an invention because such a rejection would be inconsistent with the goals of the patent system.¹¹ Therefore, marijuana-related inventions qualify for patent protection despite marijuana’s illegal status under federal law.¹² First, Part II discusses federal and state legislation on marijuana and provides an overview of patent law.¹³ Second, Part III analyzes how marijuana’s

⁸ See 21 U.S.C. § 812 (2012) (classifying marijuana as a Schedule I substance). The manufacturing, distribution, dispensing, or possession of Schedule I substances is unlawful and subject to criminal penalties. § 841. See also Ryan Davis, *Marijuana Patent Applications Face Tough Road at USPTO*, LAW360 (Jan. 8, 2015), <http://www.law360.com/articles/609140/marijuana-patent-applications-face-tough-road-at-uspto> [<https://perma.cc/3MTM-ZHH3>] (pointing out many attorneys believe the USPTO will not issue patents protecting a substance that is illegal under federal law). The lawyers quoted by Law360 as expressing concerns regarding the patentability of marijuana strains include: David Resnick of Nixon Peabody LLP, John Dragseth of Fish & Richardson PC, and Douglas Sorocco of Dunlap Codding. *Id.* However, other attorneys have indicated that “simply because something is illegal doesn’t make it ineligible for a patent and that patents on marijuana strains may be permissible.” *Id.* Among the lawyers quoted by Law360 as being optimistic that the USPTO will grant patents protecting marijuana strains are: Robert Traver of Sheridan Ross PC, Erich Veitenheimer of Cooley LLP, and Jeremy Hanika and Anthony Marshall of Hanika & Marshall LLP. *Id.* See also Blevins, *supra* note 1 (quoting Chad Ruby, the COO of United Cannabis: “Everyone in this industry is sitting and waiting on the federal level to see what they will allow.”); Shuchman, *supra* note 5 (quoting Douglas Berman, a professor at Ohio State University’s Moritz College of Law: “No one is really sure of the law yet . . .”); Amanda Ciccattelli, *Planting the Seed for IP Protection of Marijuana Brands*, INSIDE COUNS. (Feb. 24, 2016), <http://www.insidecounsel.com/2016/02/24/planting-the-seeds-for-ip-protection-of-marijuana> [<https://perma.cc/8ZFD-WY8Q>] (“The dichotomy of legalization at the state level and the illegality of marijuana at the federal level have created a circular argument: IP laws and protection are within the domain of federal law; federal law insists that the production, sale, and the use of marijuana are illegal and, therefore, the grant of federal IP protection is limited.”).

⁹ See *supra* note 8 and accompanying text (illustrating the uncertainties surrounding the patentability of marijuana-related inventions).

¹⁰ See *infra* Part III.C (analyzing the patentability of marijuana-related inventions and marijuana strains).

¹¹ See *infra* Part III.D.2 (explaining why it would be inconsistent with the goals of the patent system to promote innovation and disclosure if illegality were considered in determining an invention’s patentable utility).

¹² See *infra* Part IV (concluding marijuana-related inventions should not lack patentable utility merely because of marijuana’s classification as an illegal substance under federal law).

¹³ See *infra* Part II (discussing the Controlled Substances Act, state legislation legalizing marijuana, and the Patent Act).

illegality under federal law affects the patentable utility of marijuana strains and marijuana-related inventions and recommends illegality should not be considered when determining patentable utility.¹⁴ Last, Part IV concludes marijuana strains and marijuana-related inventions would not lack patentable utility.¹⁵

II. BACKGROUND

Patent protection is “the strongest form of intellectual property protection.”¹⁶ For that reason, as states legalize recreational and medical marijuana, marijuana entrepreneurs become increasingly interested in protecting their inventions under patent law.¹⁷ However, patent law is a matter of federal law, and marijuana remains an illegal substance under federal law.¹⁸ As a result, it is unclear whether the USPTO, a federal administrative agency, will issue patents protecting marijuana strains and marijuana-related inventions.¹⁹ Part II provides a background to marijuana laws and the patent process.²⁰ First, Part II.A distinguishes federal and state marijuana legislation.²¹ Next, Part II.B explores pertinent patent law principles.²² Finally, Part II.C introduces the issues surrounding the patentability of marijuana based on its classification as an illegal substance under federal law.²³

¹⁴ See *infra* Part III (examining what role, if any, illegality should play in a determination of patentable utility).

¹⁵ See *infra* Part IV (concluding marijuana-related patent applications do not lack utility simply based on marijuana’s federal classification as an illegal substance).

¹⁶ Sam Kamin & Viva Moffat, *Trademark Laundering, Useless Patents, and Other IP Challenges for the Marijuana Industry*, 73 WASH. & LEE 217, 264 (2016).

¹⁷ See *supra* notes 5–6 and accompanying text (outlining the reasons marijuana entrepreneurs are interested in obtaining patent protection).

¹⁸ See *supra* note 8 and accompanying text (identifying the federal ban on marijuana and the establishment of federal patent law).

¹⁹ See *supra* note 8 and accompanying text (discussing attorney concerns on the patentability of marijuana strains and marijuana-related inventions). While some attorneys argue the USPTO will most likely deny patent applications on a substance deemed illegal by federal law, there is, however, no basis to determine how the USPTO will respond to marijuana plant patent applications because “there has never been a precisely analogous situation where a substance is legal in some states, but still technically illegal nationwide.” Davis, *supra* note 8.

²⁰ See *infra* Part II (discussing federal and state legislation criminalizing and legalizing, respectively, the use of marijuana in the United States, as well as basis patent law principles).

²¹ See *infra* Part II.A (exploring federal and state marijuana legislation).

²² See *infra* Part II.B (providing a brief overview of relevant patent law principles).

²³ See *infra* Part II.C (presenting the patentability issues surrounding marijuana strains and marijuana-related inventions).

A. *Marijuana Laws in the United States*

Cannabis, more commonly known as marijuana or weed, was accessible and freely used by Americans before it first became federally regulated in the early twentieth century with the passage of the Pure Food and Drug Act.²⁴ State regulation followed, and by 1931, twenty-two states had enacted laws outlawing or regulating marijuana.²⁵ Nonetheless, marijuana remained legal under federal law until 1970, when Congress passed the Comprehensive Drug Abuse Prevention and Control Act ("CDAPCA").²⁶ Specifically, Title II of the CDAPCA, the Controlled Substances Act ("CSA"), is the "key federal drug policy" regulating controlled substances, including marijuana.²⁷

The CSA was passed by Congress and signed into law by President Nixon to decrease drug abuse and regulate the traffic of controlled substances.²⁸ Under the CSA, drugs, substances, and chemicals used to

²⁴ See generally Helia Garrido Hull, *Lost in the Weeds of Pot Law: The Role of Legal Ethics in the Movement to Legalize Marijuana*, 119 PENN ST. L. REV. 333, 336–38 (2014) (exploring the history of marijuana use in America); see also Stephen Siff, *The Illegalization of Marijuana: A Brief History*, ORIGINS (May 2014), <http://origins.osu.edu/article/illegalization-marijuana-brief-history/page/0/0> [https://perma.cc/B7YY-CGEY] (providing a brief history of marijuana laws in the United States). The Pure Food and Drug Act was passed in 1906 and required medicine companies to indicate on medicine labels whether the remedy contained cannabis. Siff, *supra* note 24. Then, Congress enacted the Marijuana Tax Act in 1937, requiring people who dealt with marijuana commercially, prescribed it, or possessed it "to purchase a tax stamp in order to possess marijuana legally." Garrido Hull, *supra* note 24, at 337.

²⁵ See Richard J. Bonnie & Charles H. Whitebread, *The Forbidden Fruit and the Tree of Knowledge: An Inquiry into the Legal History of American Marijuana Prohibition*, 56 VA. L. REV. 971, 1010–20 (1970) (examining the development of marijuana state legislation). By 1931, twenty-one states had restricted the sale of marijuana; "one state had prohibited its use for any purpose, and four states had outlawed its cultivation." *Id.* at 1010–11. For example, in 1914, New York prohibited marijuana, and in 1905, Utah prohibited the sale or possession of marijuana. *Id.* at 1010.

²⁶ See Dana Graham, *Decriminalization of Marijuana: An Analysis of the Laws in the United States and the Netherlands and Suggestions for Reform*, 23 LOY. L.A. INT'L & COMP. L. REV. 297, 301 (2001) (stating the Comprehensive Drug Abuse Prevention and Control Act ("CDAPCA") "consolidated federal laws addressing drug trafficking and drug abuse," as well as "finalized the prohibition on drugs including marijuana . . ."); see also Siff, *supra* note 24 (noting the CDAPCA classified marijuana in the most restrictive category of drugs).

²⁷ See Garrido Hull, *supra* note 24, at 338 (discussing federal law controlling marijuana).

²⁸ See Robert A. Mikos, *Preemption under the Controlled Substances Act*, 16 J. HEALTH CARE L. & POL'Y 5, 10 (2013) (citing *Gonzales v. Raich*, 545 U.S. 1, 12 (2005)) ("Congress passed the CSA primarily to 'conquer drug abuse and to control the legitimate and illegitimate traffic in controlled substances.'"); see generally Matthew B. Hodroff, *The Controlled Substances Act: Time to Reevaluate Marijuana*, 36 WHITTIER L. REV. 117, 117 (2014) (exploring the Controlled Substances Act ("CSA") and proposing a proper reassessment of marijuana under the Act); Robert A. Mikos, *On the Limits of Supremacy: Medical Marijuana and the States' Overlooked Power to Legalize Federal Crime*, 62 VAND. L. REV. 1421, 1427–36 (2009) (providing background

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make drugs are classified into five schedules, depending on the substance's potential for abuse, accepted medical use, and safety for use.²⁹ Congress classified marijuana as a Schedule I substance—"the most dangerous class of drugs"—along with heroin, LSD, and ecstasy, among others.³⁰ The decision to classify marijuana as a Schedule I substance reflects the finding that marijuana has a high potential for abuse, no currently accepted medical use, and lack of accepted safety for use.³¹ Accordingly, manufacturing, distributing, dispensing, and possessing marijuana is prohibited under federal law and subject to criminal prosecution.³²

Despite efforts to the contrary, Congress refuses to reschedule marijuana, and the Drug Enforcement Agency ("DEA") routinely rejects requests to administratively reschedule marijuana.³³ Thus, it appears

information on the CSA and state medical marijuana laws).

²⁹ See 21 U.S.C. § 812 (2012) (establishing the five schedules of controlled substances and listing the findings required for each schedule). See generally *Drug Scheduling*, DRUG ENFORCEMENT ADMIN. (Oct. 21, 2015), <http://www.dea.gov/druginfo/ds.shtml> [<https://perma.cc/36SJ-245E>] (explaining drug scheduling).

³⁰ *Drug Scheduling*, *supra* note 29. See also § 812(c) (instructing "any material, compound, mixture, or preparation, which contains any quantity of any of the following hallucinogenic substances . . . (10) Marihuana" is a Schedule I drug or substance).

³¹ See § 812(b) (indicating a substance should not be placed in Schedule I unless the following findings are made with respect to the substance: "(A) The drug or other substance has a high potential for abuse. (B) The drug or other substance has no currently accepted medical use in treatment in the United States. (C) There is a lack of accepted safety for use of the drug or other substance under medical supervision.").

³² See § 841 (listing the acts considered unlawful and the penalties for a violation). Under § 841 it is unlawful "for any person knowingly or intentionally (1) to manufacture distribute, or dispense, or possess with intent to manufacture, distribute, or dispense, a controlled substance; or (2) to create, distribute, or dispense, or possess with intent to distribute or dispense, a counterfeit substance." § 841(a). The penalties for a violation vary depending on the substance and amount of the substance. § 841(b).

³³ See Mikos, *supra* note 28, at 1434-35 (noting Congress has rejected proposals to reschedule marijuana and that the federal government refuses to legalize marijuana). Under the CSA, the Attorney General has the power to reschedule drugs. § 814(a). The Attorney General can also delegate this authority to the Drug Enforcement Agency ("DEA"). 28 C.F.R. § 0.100(b) (2012). See also *Alliance for Cannabis Therapeutics v. Drug Enforcement Admin.*, 15 F.3d 1131, 1132-33 (D.C. Cir. 1997) (denying petitions to review an order issued by the DEA denying the rescheduling of marijuana); *United States v. Pickard*, 100 F. Supp. 3d 981, 988 (E.D. Cal. 2015) (denying defendant's motion to challenge marijuana's status as a Schedule I substance); Elizabeth Roth, *Light, Smoke, and Fire: How State Law Can Provide Medical Marijuana Users Protection from Workplace Discrimination*, 55 B.C. L. REV. 1759, 1765 n.41 (2014) (reviewing unsuccessful efforts to reschedule marijuana). In fact, the Obama Administration opposed the legalization of marijuana. See *Marijuana*, OFF. OF NAT'L DRUG CONTROL POL'Y (Oct. 21, 2015), <https://www.whitehouse.gov/ondcp/marijuana> [<https://perma.cc/U2NK-PWT4>] ("The Administration steadfastly opposes legalization of marijuana and other drugs because legalization would increase the availability and use of illicit drugs, and pose significant health and safety risks to all Americans, particularly young

marijuana will remain illegal under federal law in the near future.³⁴ That is not the case, however, at the state level.³⁵

Starting in 1996, states started passing laws legalizing marijuana for medical or recreational use, resulting in conflicting federal and state marijuana policies.³⁶ California was the first state to legalize the medical use of marijuana in 1996 when Proposition 215 was passed.³⁷ Since then,

people.”); see also *Marijuana Resource Center: State Laws Related to Marijuana*, OFF. OF NAT'L DRUG CONTROL POL'Y (Oct. 20, 2015), <https://www.whitehouse.gov/ondcp/state-laws-related-to-marijuana> [<https://perma.cc/K4W9-LQ5T>] (asserting the Department of Justice is “committed to enforcing the Controlled Substances Act (CSA)”). But see Office of the Deputy Attorney General, *Guidance Regarding Marijuana Enforcement, Memorandum for all United States Attorneys*, U.S. DEP'T OF JUST. (Aug. 29, 2013), <http://www.justice.gov/iso/opa/resources/3052013829132756857467.pdf> [<https://perma.cc/A6H6-DJDQ>] (advising it is not an efficient use of federal resources to focus federal drug enforcement efforts in states that have legalized marijuana in some form as long as they have “implemented strong and effective regulatory and enforcement systems to control the cultivation, distribution, sale, and possession of marijuana, conduct in compliance with those laws and regulations”).

³⁴ See *State-By-State Medical Marijuana Laws*, MARIJUANA POL'Y PROJECT, at 2 (2001), <http://medicalmarijuana.procon.org/sourcefiles/state-by-state-guidelines-remove-threat-of-arrest.pdf> [<https://perma.cc/A5EP-LB2Y>] (providing that despite multiple petitions and “[a]fter years of litigation, it has essentially been determined the DEA will not move the substance into a less restrictive schedule without an official determination of ‘safety and efficacy’ by the U.S. Food and Drug Administration (FDA).”); see also *supra* note 33 and accompanying text (describing the opposition to rescheduling marijuana); but see S.683, 114th Cong. (2015) (proposing to reschedule marijuana as a Schedule II substance and amending the CSA to protect individuals acting in compliance with marijuana state laws from federal prosecution). Senator Cory Booker of New Jersey introduced this Bill in the Senate on March 10, 2015. *S.683—Compassionate Access, Research Expansion, and Respect States Act of 2015*, CONGRESS.GOV (Oct. 21, 2015), <https://www.congress.gov/bill/114th-congress/senate-bill/683/actions> [<https://perma.cc/MCS3-VFEW>]. The Bill was read twice and referred to the Senate Committee on the Judiciary. *Id.* The Senate's bill House counterpart is H.R. 1538, and was introduced by Steve Cohen of Tennessee on March 23, 2015. *H.R. 1538—CARERS Act of 2015*, CONGRESS.GOV (Oct. 21, 2015), <https://www.congress.gov/bill/114th-congress/house-bill/1538> [<https://perma.cc/2XNN-EQAR>]. H.R. 1538 was last under consideration by the House Subcommittee on Crime, Terrorism, Homeland Security, and Investigation in April. *Id.* A similar House bill is H.R. 1940, introduced April 22, 2015. *H.R. 1940—Respect State Marijuana Laws Act of 2015*, CONGRESS.GOV (Oct. 21, 2015), <https://www.congress.gov/bill/114th-congress/house-bill/1940> [<https://perma.cc/P43T-A9KR>].

³⁵ See *infra* Part II.A.2 (summarizing recent state legislation legalizing marijuana).

³⁶ See *Marijuana Resource Center: State Laws Related to Marijuana*, *supra* note 34 (indicating twenty-three states and Washington D.C. have legalized the medical use of marijuana since 1996); see also *State Medical Marijuana Laws*, *supra* note 6 (asserting California was the first state to legalize the medical use of marijuana in 1996); *State-By-State Medical Marijuana Laws*, *supra* note 34, at 1, 3, 5 (providing an overview of state medical marijuana laws, federal court rulings, and attempts to reschedule marijuana).

³⁷ See *State Medical Marijuana Laws*, *supra* note 6 (asserting California became the first state to legalize the use of medical marijuana when voters passed Proposition 215); see also Hodroff, *supra* note 28, at 124–25 (indicating Arizona and California were the first states to pass laws allowing the medical use of marijuana). Proposition 215, also known as the

twenty-two states, Washington D.C., and Guam have passed laws authorizing the medical use of marijuana.³⁸ Furthermore, starting in 2012, four states and the District of Columbia passed initiatives allowing the sale and distribution of marijuana for recreational purposes.³⁹ Scholars contend that by the end of 2016, up to another eleven states will have legalized marijuana.⁴⁰

In sum, today, twenty-three states and the District of Columbia have legalized medical marijuana.⁴¹ In addition, as of October 2015, four states allow the recreational use of marijuana.⁴² However, these laws do not change the fact that marijuana remains illegal under federal law.⁴³ Because federal law governs patent law, the federal ban on marijuana may affect the patentability of marijuana strains and marijuana-related

Compassionate Use Act of 1996, specifically addressed which medical conditions were eligible to be treated with marijuana. Hodroff, *supra* note 28, at 125. On the other hand, Arizona's initiative, Proposition 203, concerned all Schedule I substances, allowing doctors to prescribe Schedule I drugs to terminally ill patients under certain circumstances. *Id.*

³⁸ See *Marijuana Resource Center: State Laws Related to Marijuana*, *supra* note 34 (indicating the laws of the twenty-three states "vary greatly in their criteria and implementation" and that regulations on the use of marijuana may also vary at the county level). As of October 21, 2015, the following states and the District of Columbia allow medical marijuana: Alaska, Arizona, California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Maine, Maryland, Massachusetts, Michigan, Minnesota, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, Oregon, Rhode Island, Vermont, and Washington. *State Medical Marijuana Laws*, *supra* note 6.

³⁹ See *Marijuana Resource Center: State Laws Related to Marijuana*, *supra* note 34 (summarizing the status of marijuana use throughout the states). The four states allowing the sale and distribution of marijuana for recreational purposes are: Alaska, Colorado, Oregon, and Washington. *Id.* Colorado and Washington were the first to legalize recreational marijuana when voters passed Amendment 64 and Initiative 502, respectively. Hodroff, *supra* note 28, at 125–26. Then, in 2014, Alaska passed Ballot Measure 2, the District of Columbia passed Initiative 71, and Oregon passed Measure 91. See *State Medical Marijuana Laws*, *supra* note 6 (indicating which states allow for the retail sale and adult use of marijuana and providing links to the initiatives).

⁴⁰ See Christopher Ingraham, *These Are the States That Could Legalize Pot Next*, WASH. POST (July 19, 2015), <http://www.washingtonpost.com/news/wonkblog/wp/2015/07/19/these-are-the-states-that-could-legalize-pot-next/> [<https://perma.cc/6WYU-96CC>] (according to Ballotpedia — a website that tracks legislation — initiatives legalizing marijuana may appear in eleven states in 2016).

⁴¹ See *supra* note 38 and accompanying text (listing the states that have legalized medical marijuana).

⁴² See *supra* note 39 and accompanying text (showing the states that have legalized recreational marijuana). The use of "today" refers to the time period in which this Note was written.

⁴³ See *Marijuana Resource Center: State Laws Related to Marijuana*, *supra* note 36 (discussing state laws related to the medical and recreational use of marijuana and noting that these state laws "do not change the fact that using marijuana continues to be an offense under Federal law").

inventions developed in states where marijuana use is otherwise legal.⁴⁴ Therefore, an overview of patent law is needed.⁴⁵

B. Patent Law Overview

The primary sources of patent law in the United States are the Constitution, federal statutes and regulations, and federal judicial opinions interpreting and applying these statutes and regulations.⁴⁶ The Founding Fathers recognized the importance of a patent system, granting Congress the power “[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and inventors the exclusive Right to their respective Writings and Discoveries.”⁴⁷ The Patent Act of 1836 provided the basis for the modern patent system, and the amended Patent Act of 1952 is the statute that governs patent law today.⁴⁸

⁴⁴ See *supra* note 8 and accompanying text (explaining why some lawyers think the USPTO will not issue patents protecting marijuana strains based on marijuana’s status as an illegal substance under federal law).

⁴⁵ See *infra* Part II.B (discussing the requirements for patentability and the different types of patents available).

⁴⁶ See JANICE M. MUELLER, PATENT LAW 31 (2009) (listing the sources of patent law). The Patent Act of 1952, the basis of the modern patent system, was codified in Title 35 of the United States Code. *Id.* at 33–34. The sections of the code that “impact the operations of the [USPTO] are implemented through the agency’s governing regulations.” *Id.* at 34. These regulations are in Title 37 of the Code of Federal Regulations. *Id.* Furthermore, the USPTO publishes the Manual of Patent Examining Procedure (“MPEP”), which outlines the laws and regulations patent examiners follow when examining patent applications. *Id.* However, the MPEP is simply an operations manual for patent examiners and, therefore, does not have “the force and effect of the law.” *Id.* Nonetheless, it is a useful resource for patent attorneys, and courts are willing to give the MPEP “judicial notice” to the extent that it does not conflict with the Patent Act. *In re Fisher*, 421 F.3d 1365, 1372 (Fed. Cir. 2005).

⁴⁷ U.S. CONST. art. I, § 8, cl. 8. District courts have original jurisdiction over cases that “arise under any Act of Congress relating to patents[.]” according to 28 U.S.C § 1338, and the U.S. Court of Appeals for the Federal Circuit (“CAFC”) has exclusive jurisdiction over appeals from final decisions of district courts relating to patents. 28 U.S.C. § 1295 (2012). Before Congress created the CAFC in 1982, the “appropriate federal regional circuit court of appeals for the federal district court in question” would review appeals of judgments in patent cases. MUELLER, *supra* note 46, at 38. The CAFC was formed by merging the U.S. Court of Customs and Patent Appeals and the appellate division of the U.S. Court of Claims. U.S. Court of Appeals for the Federal Circuit, *Court Jurisdiction* (Oct. 23, 2015), <http://www.cafc.uscourts.gov/the-court/court-jurisdiction> [https://perma.cc/B28J-63BA]. The CAFC adopted as binding precedent the decisions of both of its predecessor courts. MUELLER, *supra* note 46, at 34. In addition, the en banc court of the CAFC can “change the law or overrule existing precedent.” *Id.* Nonetheless, the U.S. Supreme Court can review the CAFC’s decisions. *Id.*

⁴⁸ See MUELLER, *supra* note 46, at 33 (summarizing the history and development of the Patent System in the United States). The first patent statute passed by Congress was the Patent Act of 1790; however, the Patent Act of 1836 provided the basis for the modern patent system. EDWARD C. WALTERSCHEID, TO PROMOTE THE PROGRESS OF USEFUL ARTS: AMERICAN PATENT LAWS AND ADMINISTRATION, 1798-1836 1, 3 (1998). See also PAUL GOLDSTEIN & R.

The USPTO grants three types of patents: utility patents, design patents, and plant patents.⁴⁹ First, Part II.B.1 examines the three different types of patents and explains the statutory requirements for patent protection.⁵⁰ Next, Part II.B.2 provides an overview of the patent prosecution process.⁵¹

1. Types of Patents and Requirements for Protection

The majority of the patents issued by the USPTO are utility patents.⁵² Utility patents protect the way an invention is used and the way it works.⁵³ Further, utility patents have a term of twenty years from the date on which the application was filed and afford the patentee the right to exclude others from making, using, offering to sell, or selling the patented invention in the United States, as well as the right to exclude others from importing the patented invention into the United States.⁵⁴

ANTONY REESE, COPYRIGHT, PATENT, TRADEMARK AND RELATED STATE DOCTRINES 416 (2012) (providing a historical overview of patent legislation). The Patent Act of 1793 repealed the Patent Act of 1790. WALTERSCHEID, *supra* note 48, at 3. Before the Patent Act of 1836, four other patent acts were passed. *Id.* The other two main revisions to the patent statute are the Patent Act of 1870 and the Leahy-Smith America Invents Act (“AIA”) in 2011. MUELLER, *supra* note 46, at 33; GOLDSTEIN & REESE, *supra* note 48, at 416. The Patent Act of 1870 introduced the requirement that patent applicants include claims. MUELLER, *supra* note 46, at 33. On the other hand, the AIA modified the patent prosecution process, changed the rules for the novelty requirement, and revised the priority determination from first to invent to first inventor to file. GOLDSTEIN & REESE, *supra* note 48, at 453, 483–84, 562–63.

⁴⁹ See GOLDSTEIN & REESE, *supra* note 48, at 418, 419 (indicating that the Patent Act authorizes utility patents, design patents, and plant patents).

⁵⁰ See *infra* Part II.B.1 (describing the different types of patents and outlining the conditions for patentability).

⁵¹ See *infra* Part II.B.2 (explaining the patent prosecution process).

⁵² See U.S. Patent Statistics, Calendar Years 1963–2014 (Oct. 23, 2015), http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.pdf [<https://perma.cc/N9QG-T7YY>] (reporting the number of patent applications received and granted according to the type of patent and calendar year). In 2014, the USPTO granted a total of 326,033 patents, 300,677 of which were utility patents. *Id.*

⁵³ See *Design Patent Application Guide*, U.S. PAT. & TRADEMARK OFF. (Oct. 26, 2015), <http://www.uspto.gov/patents-getting-started/patent-basics/types-patent-applications/design-patent-application-guide> [<https://perma.cc/FLJ5-TP4G>] (explaining the differences between design and utility patents); *Manual of Patent Examining Procedures* § 1502.01 (Nov. 2015), <http://www.uspto.gov/web/offices/pac/mpep/s1502.html> [<https://perma.cc/G9VL-X8XU>] (summarizing the differences between utility and design patents).

⁵⁴ See 35 U.S.C. § 154(a)(2) (2012) (providing the term of patents); § 271 (establishing the acts that constitute infringement of a patent); *Manual of Patent Examining Procedures* § 1502.01, *supra* note 53 (stating that for the patents issued on applications filed on or after June 8, 1995, the term of the patent starts on the date the patent issues, but ends twenty years from the date on which the patent application was filed). If an application contains a reference to an earlier filed application or applications under §§ 120, 121, or 365(c), the term of the patent

To be patentable under a utility patent, the subject matter of an invention must qualify for a patent and the invention must be new, useful, and nonobvious.⁵⁵ The first requirement for patentability is that the subject matter of the invention qualify as patent-eligible subject matter.⁵⁶ The types of inventions that qualify as patent-eligible subject matter are listed in 35 U.S.C. § 101 and are processes, machines, manufactures, and compositions of matter.⁵⁷ Nonetheless, courts have narrowed the otherwise broad scope of patentable subject matter by recognizing three

ends on the date on which the earliest application was filed. § 154(a)(2).

⁵⁵ See § 101 (listing the inventions patentable and providing the basis for the utility requirement); § 102 (establishing the novelty requirement); § 103 (formulating the nonobviousness requirement). Utility patents must also satisfy the written description and specification requirements set forth in 35 U.S.C. §§ 111, 112. MUELLER, *supra* note 46, at 97. The requirements imposed by 35 U.S.C. § 112 are known as the disclosure requirements and include the enablement, best mode, and written description of the invention requirements. *Id.* These requirements, however, “pertain to the informative quality of the patent application rather than the technical merits of the claimed invention.” *Id.* Thus, they are beyond the scope of this Note. It is sufficient to understand that these disclosure requirements arise from the quid pro quo contemplated by Congress for granting a patent monopoly. *Id.* In other words, the government agrees to give the patentee a limited monopoly over his or her invention in exchange for a sufficiently detailed and clear disclosure of the invention. *Id.*

⁵⁶ See *Manual of Patent Examining Procedures* § 2106 (Nov. 2015), <http://www.uspto.gov/web/offices/pac/mpep/s2106.html#d0e197244> [<https://perma.cc/P85Z-G97Y>] (stating that a claimed invention must be directed to patent-eligible subject matter); MUELLER, *supra* note 46, at 253–55 (discussing potentially patentable subject matter and indicating that subject matter eligibility refers to the categories of subject matter enumerated in § 101); see also *In re Bilski*, 545 F.3d 943, 950 (Fed. Cir. 2008) (“Whether a claim is drawn to patent-eligible subject matter under § 101 is a threshold inquiry, and any claim of an application failing the requirements of § 101 must be rejected even if it meets all of the other legal requirements of patentability . . .”).

⁵⁷ See § 101 (providing for the inventions patentable under the Patent Act); see also § 100 (defining “process” as meaning “process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material”). Courts have interpreted “manufacture” to mean “the production of articles for use from raw materials prepared by giving to these materials new forms, qualities, properties, or combinations, whether by hand labor or machinery.” *Am. Fruit Growers, Inc. v. Brogdex Co.*, 283 U.S. 1, 11 (1931). “Machine” refers to “a concrete thing, consisting of parts, or of certain devices and combination of devices.” *Burr v. Duryee*, 68 U.S. 531, 570 (1863). Further, newly developed plants qualify as patent-eligible subject matter. *J.E.M. AG Supply, Inc. v. Pioneer Hi-Bred Int’l, Inc.*, 122 S. Ct. 593, 596 (2001); MUELLER, *supra* note 46, at 288 n.157 (indicating plants may be eligible for protection under utility patents); *General Information about 35 U.S.C § 161 Plant Patents*, U.S. PAT. & TRADEMARK OFF. (Oct. 23, 2015), <http://www.uspto.gov/patents-getting-started/patent-basics/types-patent-applications/general-information-about-35-usc-161> [<https://perma.cc/8P6B-6NF8>]. Lastly, “composition of matter” has been construed as including “all compositions of two or more substances and . . . all composite articles, whether they be the results of chemical union, or mechanical mixture, or whether they be gases, fluids, powders, or solids.” *Shell Dev. Co. v. Watson*, 149 F. Supp. 279, 280 (D.C. Cir. 1957).

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exceptions to § 101.⁵⁸ These three exceptions are: laws of nature, physical phenomena, and abstract ideas.⁵⁹ However, applications of these judicial exceptions qualify for patent protection.⁶⁰ Subject matter eligibility is just the first hurdle an applicant must clear to patent his or her invention.⁶¹

The second statutory requirement is that the invention be new, which is also known as the novelty requirement.⁶² The test to determine whether an invention is new is set forth in 35 U.S.C. § 102(a) and requires determining whether an invention has been anticipated.⁶³ An invention is anticipated, and not novel, if the prior art is identical to the invention.⁶⁴ Specifically, a single prior art reference must disclose every element of the invention.⁶⁵ Even if a prior art reference does not entirely disclose the

⁵⁸ See *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (clarifying that even though legislative history supports a broad construction of § 101, it does not follow that § 101 “has no limits or that it embraces every discovery”).

⁵⁹ See *id.* (“[L]aws of nature, physical phenomena, and abstract ideas have been held not patentable . . .”). For example, a new mineral discovered in the earth, a new plant found in the wild, or mathematical formulas are not patentable. *Id.*

⁶⁰ See *Diamond v. Diehr*, 450 U.S. 175, 187 (1981) (“[A]n application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”); *Manual of Patent Examining Procedures* § 2106, *supra* note 56 (“While abstract ideas, physical phenomena, and laws of nature are not eligible for patenting, methods and products employing abstract ideas, physical phenomena, and laws of nature to perform a real-world function may well be.”).

⁶¹ See *supra* note 55 and accompanying text (listing all the requirements for patentability).

⁶² See § 101 (“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 thereof . . .”) (emphasis added).

⁶³ See MUELLER, *supra* note 46, at 138 (indicating that attorneys say an invention has been anticipated if the novelty provisions of § 102 are triggered). An invention is also not novel if it was “in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention . . .” § 102(a)(1). The AIA significantly revised Section 102. *Manual of Patent Examining Procedures* § 2150 (Nov. 2015), <http://www.uspto.gov/web/offices/pac/mpep/s2150.html> [<https://perma.cc/8J7E-B89T>]. Before the AIA was passed, §§ 102(a)–(g) established the test for novelty. *Id.* These provisions still apply to patent applications filed before March 16, 2013. *Id.* The most significant change to § 102 under the AIA is “when and where an event must occur in order to anticipate, and which events will anticipate . . .” GOLDSTEIN & REESE, *supra* note 48, at 457. The changes and the differences between pre-AIA and AIA § 102, however, are beyond the scope of this Note.

⁶⁴ See GOLDSTEIN & REESE, *supra* note 48, at 456 (asserting § 102 bars a patent if the prior art anticipates the invention, and the prior art anticipates the invention if it is identical to the invention). Section 102 also specifies what constitutes prior art. See § 102(a)(1) (providing patents and printed publications are prior art); § 102(b) (denoting what types of disclosures do not constitute prior art under § 102(a)); § 102(d) (stipulating when a patent is effective as prior art).

⁶⁵ See *In re Crish*, 393 F.3d 1253, 1256 (Fed. Cir. 2004) (stating that determining whether a claim is anticipated involves two steps: first, interpreting the claim language and second, comparing the construed claim to prior art references and making factual findings that “each and every limitation is found either expressly or inherently in that [a] single prior art reference”); GOLDSTEIN & REESE, *supra* note 48, at 456 (specifying under § 102, a single prior

invention, the invention may nonetheless be unpatentable if the differences would have been obvious to a person having ordinary skill in the art ("PHOSITA").⁶⁶ The third requirement, known as the non-obviousness requirement, deals with such a situation.⁶⁷

The non-obviousness requirement for patentability is set forth in § 103 of the Patent Act.⁶⁸ Under § 103, an invention is not patentable if it was obvious to a PHOSITA before the effective filing date of the patent application.⁶⁹ Thus, the test for obviousness is whether "the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious . . . to a [PHOSITA] to which the claimed invention pertains."⁷⁰ Even if nonobvious, the invention may be unpatentable if it does not satisfy the utility requirement.⁷¹

art reference must disclose all the elements of the invention).

⁶⁶ See *Manual of Patent Examining Procedures* § 2141 (Mar. 2014), <http://www.uspto.gov/web/offices/pac/mpep/s2141.html> [<https://perma.cc/753Z-9SAP>] (commenting that a patent may not be obtained, even if the invention is novel under § 102, if the invention would have been obvious to a person having ordinary skill in the art); MUELLER, *supra* note 46, at 191-92 (noting the language of § 103 indicates that the obviousness requirement must be satisfied even if an invention is not anticipated under § 102).

⁶⁷ See § 103 (providing an invention is not patentable if obvious to person having ordinary skill in the art ("PHOSITA")).

⁶⁸ See *id.* (establishing the non-obvious subject matter condition for patentability); see also MUELLER, *supra* note 46, at 191 (noting the non-obviousness requirement had been recognized in patent case law since 1851, but was not codified as § 103 until the Patent Act of 1952).

⁶⁹ See 35 U.S.C. § 103 ("A patent for a claimed invention may not be obtained . . . if . . . the claimed invention . . . would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art . . .").

⁷⁰ *Id.* See also *Graham v. John Deere Co.*, 383 U.S. 101, 103 (1966) (citing § 103 as providing the test for obviousness). In *Graham*, the Supreme Court's seminal decision concerning obviousness, the Court set forth the factors to be assessed in determining whether an invention would have been obvious to a PHOSITA. See MUELLER, *supra* note 46, at 196 (noting *Graham* is a landmark opinion); *Manual of Patent Examining Procedures*, *supra* note 66, at § 2141 (describing the recent Supreme Court's decision in *KSR Int'l Company v. Teleflex Inc.*, 550 U.S. 398 (2007)), which reaffirmed the obviousness framework set forth in *Graham*). In *Graham*, the court held that the obviousness of the invention is determined by considering: the scope and content of the prior art, the differences between the prior art and the claims at issue, and the pertinent level of the ordinary skill in the art. 383 U.S. at 17. Furthermore, courts can take into account secondary considerations, such as commercial success, long felt but unsolved needs, and failure of others to solve the need. *Id.* at 17-18.

⁷¹ See § 101 (indicating an invention must be useful to be patentable); but see *Lee v. Dayton-Hudson Corp.*, 838 F.2d 1186, 1188 (Fed. Cir. 1988) (holding design patents are not subject to the utility requirement).

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An applicant is not entitled to a patent on his invention unless the invention is useful.⁷² An invention is useful if it possesses utility.⁷³ Although the utility requirement is established by 35 U.S.C. § 101, neither this section nor the Patent Act explains what utility means, and thus, case law is the source of utility principles.⁷⁴ Historically, Justice Joseph Story's instructions to the jury in *Lowell v. Lewis* are recognized as the first articulation of a definition of utility.⁷⁵ In charging the jury, Justice Story stated, "[a]ll that the law requires is, that the invention should not be frivolous or injurious to the well-being, good policy, or sound morals of society."⁷⁶ This definition came to be known as the "moral-utility doctrine."⁷⁷ Thereafter, Justice Story's definition would be used to invalidate patents for lack of moral utility in two types of cases: inventions to deceive or commit fraud and inventions used for gambling.⁷⁸

⁷² See U.S. CONST. art. I, § 8, cl. 8 ("To promote the progress of science and *useful* arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries . . .") (emphasis added); § 101 ("Whoever invents or discovers any new and *useful* process, machine, manufacture or composition of matter . . . may obtain a patent thereof . . .").

⁷³ See MUELLER, *supra* note 46, at 235 (noting that a useful invention possesses utility).

⁷⁴ See *id.* (explaining the Patent Act does not define what useful means, and thus, case law fills this gap).

⁷⁵ See Margo A. Bagley, *Patent First, Ask Questions Later: Morality and Biotechnology in Patent Law*, 45 WM. & MARY 469, 489 (2003) ("Justice Story is credited with the first articulation of the [utility] doctrine . . ."); Andrew R. Smith, Note, *Monsters at the Patent Office: The Inconsistent Conclusions of Moral Utility and the Controversy of Human Cloning*, 53 DEPAUL L. REV. 159, 164 (2003) ("Justice Story enunciated the first interpretation of the term 'useful' within the 1970 Act.>").

⁷⁶ *Lowell v. Lewis*, 15 F. Cas. 1018, 1019 (C.C.D. Mass. 1817). Justice Joseph Story further explained that the word "useful" was incorporated into the Patent Act "in contradistinction to mischievous or immoral." *Id.* Examples of inventions that would not satisfy the utility requirement, Justice Story stated, are inventions to poison people, promote debauchery, or facilitate private assassination. *Id.* In *Lowell*, the plaintiff sued the defendant for infringement of an improvement in the construction of pumps. *Id.* At issue was the utility of the invention. *Id.* The court concluded that the plaintiff's invention was useful because there was no evidence that the invention was mischievous. *Id.* The court further rejected the defendant's contention that to satisfy the utility requirement, the plaintiff's pump had to be better than previous pumps. *Id.* Justice Story explained that whether the invention is more or less useful is immaterial in determining an invention's utility. *Lowell*, 15 F. Cas. at 1019.

⁷⁷ See Bagley, *supra* note 75, at 490 (asserting Justice Joseph Story's words in *Lowell* provided the foundation for the "moral utility" doctrine); Benjamin D. Enerson, Note, *Protecting Society from Patently Offensive Inventions: The Risk of Reviving the Moral Utility Doctrine*, 89 CORNELL L. REV. 685, 690 (2004) (denoting Justice Story's definition in *Lowell* is referred to as the moral utility doctrine); Gary Gregory, Note, *What's Immoral about Monsanto: Strengthening the Roots of the Moral Utility Requirement by Amending the U.S. Patent Act*, 21 CARDOZO J. INT'L & COMP. L. 759, 771 (2013) (indicating Justice Story's words in *Lowell* are known as the "moral utility requirement").

⁷⁸ See Laura A. Keay, *Morality's Move within U.S. Patent Law: From Moral Utility to Subject Matter*, 40 AIPLA Q.J. 409, 412 (2012) (noting Justice Story's definition was used to invalidate two types of patents: "gambling devices 'injurious' to the moral of society" and "inventions

More recently, however, since the Supreme Court's decision in *Brenner v. Manson*, courts have defined utility in terms of specific and substantial utility.⁷⁹ To begin, in *In re Fisher*, the Federal Circuit elaborated on the meaning of specific and substantial utility.⁸⁰ *Fisher* indicated that to satisfy the substantial utility prong, "an asserted use must show that that claimed invention has a significant and presently available benefit to the public."⁸¹ Furthermore, to satisfy the specific utility prong, "an

with a mischievous tendency"); Thomas A. Magnani, *The Patentability of Human-Animal Chimeras*, 14 BERKELEY TECH. L.J. 443, 451 (1991) (stating that courts have applied Justice Story's definition in two specific cases: inventions used to deceive or commit fraud and gambling devices and other inventions frowned upon by society). From 1889 to the early 1990s, courts cited some version of Justice Story's definition of utility to invalidate patents on gambling-related inventions. *Keay*, *supra* note 78, at 412-15. Specifically, courts invalidated patents for devices that could only be used for gambling purposes or could be used for other purposes but were currently being used for gambling. *Id.* For example, in *National Automatic Device Co v. Lloyd*, the Northern District of Illinois invalidated a patent covering a "Toy Automatic Race-Course." 40 F. 89, 89-90 (C.C.N.D. Ill. 1889). The court reasoned that the invention lacked utility because, so far, it had only been used for the "pernicious and hurtful" purpose of gambling. *Id.* at 90. *See also* *Brewer v. Lichtenstein*, 278 F. 512, 513-14 (7th Cir. 1922) (affirming a district court's decision to dismiss an infringement action of a patent covering a vending device); *Meyer v. Buckley Mfg. Co.*, 15 F. Supp. 640, 641 (D.C.N.D. Ill. 1936) (invalidating a patent for a vending machine for lack of utility because it was "a device for playing a game of chance"); *Schultze v. Holtz*, 82 F. 448, 448-49 (C.C.N.D. Cal. 1897) (invalidating a patent claiming a coin-controlled apparatus); *Reliance Novelty Co. v. Dworzek*, 80 F. 902, 903-04 (C.C.N.D. Cal. 1897) (denying a preliminary injunction in an infringement action of a patent on slot machines because the device lacked utility). In *Reliance Novelty*, the court reasoned that the device lacked utility because it had only been used for gambling purposes. 80 F. at 903. Similarly, in *Schultze*, the court concluded the device lacked utility because it had and could only be used for gambling purposes. 82 F. at 449. Last, in *Brewer*, the court reasoned that the device lacked utility because it could only be used as a lottery device. 278 F. at 513. Concerning deceptive inventions, in *Rickard v. Du Bon*, the Second Circuit affirmed the district court's decision to invalidate a patent claiming a method for treating tobacco leaves to cause spotting. 103 F. 868, 869, 873 (2d Cir. 1990). At the time of the invention, there was a notion among smokers that spotted tobacco was of higher quality. *Id.* at 869. The court concluded the invention lacked utility because it could not improve the quality of the tobacco, and thus, the spotting was deceiving to buyers. *Id.* at 872. Further, the court noted that patents could not be granted on inventions that encouraged profiting by deception and fraud. *Id.* at 873.

⁷⁹ *See* 383 U.S. 519, 534 (1966) (concluding that the "basic quid pro quo contemplated by the Constitution and the Congress for granting a patent monopoly is the benefit derived by the public from an invention with substantial utility"). At issue in *Brenner* was the utility of a process for making steroids. *Id.* at 520. Even though the process yielded a steroid closely related to a steroid with known utility, the court denied the patent for lack of utility. *Id.* at 534-35. The court concluded that the applicant was unable to show the product that the process yielded was substantially useful. *Id.*

⁸⁰ *See* 421 F.3d 1365, 1371 (Fed. Cir. 2005) (defining specific and substantial utility). In *In re Fisher*, the Federal Circuit affirmed the USPTO Board of Patent Appeals and Interference's decision finding claims for "expressed sequence tags" unpatentable for lack of utility. *Id.* at 1367.

⁸¹ *Id.* at 1371.

asserted use must also show that that claimed invention can be used to provide a well-defined and particular benefit to the public.”⁸²

Even though courts have criticized Justice Story’s definition of utility and expressly rejected the application of the doctrine to gambling and deceptive devices, no court has expressly foreclosed the application of the moral utility doctrine to cases outside the realm of gambling and deceptive devices.⁸³ Scholars, however, propose that the moral utility

⁸² *Id.*

⁸³ See Smith, *supra* note 75, at 186 (“Although no judicial opinion has dismissed moral utility entirely, its direct application to patentable utility is severely limited.”). The decline of the application of the moral utility doctrine started in 1903, with *Fuller v. Berger*. Smith, *supra* note 75, at 165–66. In *Fuller*, the Seventh Circuit refused to invalidate a patent covering a bogus coin detector used to guard gambling machines. 120 F. 274, 274, 278 (7th Cir. 1903). In finding the device possessed the requisite utility, the court defined utility as requiring that an invention serve some “beneficial end.” *Id.* at 275. The *Fuller* court placed high importance on the fact that the invention, even though only used in association with gambling devices at the time, was (1) not originally designed to be used with gambling devices; (2) could be used for purposes other than with gambling devices; and (3) when used with gambling devices, it was not connected to the gambling device and thus had no element of chance to it. *Id.* at 276. Following this decision, in *Chicago Patent Corp. v. Cenco, Inc.*, the Seventh Circuit concluded a pin-ball machine was useful because it could not say “as a matter of law” that the machine was “inherently a gambling device.” 124 F.2d 725, 728 (7th Cir. 1941). Similarly, the Tenth Circuit, in *Callison v. Dean*, concluded an amusement device was useful because it could be used for innocent amusement purposes. 70 F.2d 55, 58 (10th Cir. 1934). Then, in 1947, the Third Circuit applied Justice Story’s definition of utility in *Cusano v. Kottler* to conclude that a gaming table satisfied the utility requirement. 159 F.2d 159, 162 (2d Cir. 1947). Although the court took into consideration the gaming aspects of the invention, the court ultimately reasoned that it was useful because it did not have to be used for gambling purposes. *Id.* at 161–62. Subsequently, in *Ex parte Murphy*, the USPTO Board of Appeals reversed an examiner’s determination that a slot machine patent lacked utility because it could only be used for gambling. 200 U.S.P.Q. 80 (P.O. Bd. App. 1977). The Board reasoned that the USPTO should not be the agency responsible for enforcing morality with respect to gambling, and thus, concluded “inventions which are useful only for gambling ipso facto” were not “void of patentable utility.” *Id.* Thus, *Ex parte Murphy* expressly rejected the application of the moral utility doctrine to gambling devices. *Id.* On the other hand, *Whistler Corp. v. Autotronics, Inc.* was the first case that did not apply the doctrine to invalidate patents covering inventions used to deceive or commit fraud. No. CA3–85–2573–D, 1988 WL 212501, at *1 (N.D. Tex. July 28, 1988). Here, the court concluded a radar signal detector was useful despite being used to circumvent the law. *Id.* Next, in *Juicy Whip, Inc. v. Orange Bang, Inc.*, the Federal Circuit held that inventions could not be held unpatentable for lack of utility “simply because they have the capacity to fool some members of the public.” 185 F.3d 1364, 1368 (Fed. Cir. 1999). Similar to the court’s reasoning in *Ex parte Murphy*, the court noted that the utility requirement was not a command to the USPTO or the courts to aid as “arbiters of deceptive trade practices.” *Id.* Therefore, *Juicy Whip* marked the end of the application of the moral utility doctrine to invalidate inventions designed to deceive or commit fraud. *Id.* In *Brenner*, the court critiqued Justice Story’s definition for two reasons. 383 U.S. at 533. First, the court explained that, when read narrowly, the definition compelled the court to determine whether an invention was “frivolous and insignificant,” a task difficult to do. *Id.* On the other hand, when read broadly, it would “allow the patenting of any invention not positively harmful to society.” *Id.* According to the court, this broad reading gave the word

doctrine is no longer good law.⁸⁴ Nonetheless, courts have not expressly examined whether morality or illegality should be taken into consideration when determining whether an invention provides some specific and substantial benefit to the public under *Brenner* and *In re Fisher's* definitions.⁸⁵

In fact, the only time a court has, post-*Brenner*, alluded to how illegality would affect the patentability of an invention was in *Whistler Corp. v. Autotronics, Inc.*⁸⁶ Holding that a radar signal detector was patentable even though the primary and almost exclusive use of the device was to circumvent law enforcement, the court concluded, “[u]nless and until detectors are banned outright, or Congress acts to withdraw patent protection for them, radar detector patentees are entitled to the protection of the patent laws.”⁸⁷ Similarly, but before *Brenner* was decided, in *Fuller v. Berger*, the court rejected an accused infringer’s argument that the court should deny an injunction because the invention could only be used for illegal purposes under state law.⁸⁸ *Fuller* further concluded that even though state laws prevented the patentee from practicing his invention, they did not affect his right to exclude others from using the invention where legal.⁸⁹ Nevertheless, neither courts nor

“useful” a meaning Congress did not intend. *Id.* In *In re Fisher*, the Federal Circuit stated the “Supreme Court *appeared* to reject Justice Story’s de minimis view of utility” in *Brenner*. 421 F.3d at 1370 (emphasis added).

⁸⁴ See generally Bagley, *supra* note 75, at 492 (noting the moral utility doctrine has “suffered a judicial demise”); Enerson, *supra* note 77, at 691 (claiming “the moral utility doctrine is not completely dead”); Gregory, *supra* note 77, at 762 (arguing for the implementation of a more strict patent application process that would revitalize the “weakened” moral utility doctrine) (emphasis added); Cynthia M. Ho, *Splicing Morality and Patent Law: Issues Arising from Mixing Mice and Men*, 2 WASH. U. J.L. & POL’Y 247, 249 (2000) (noting no court has relied on the moral utility doctrine since 1977); Keay, *supra* note 78, at 411 (indicating the decline of the moral utility doctrine after its prominence in the twentieth century); Magnani, *supra* note 78, at 453 (reasoning the moral utility doctrine is defunct based on the district courts’ attitude towards the doctrine); Dana Visser, Note, *Who’s Going to Stop Me from Patenting My Six-Legged Chicken? An Analysis of the Moral Utility Doctrine in the United States*, 46 WAYNE L. REV. 2067, 2070, 2086 (2000) (observing that the cases on the moral utility doctrine appear contradictory and it is unclear whether the doctrine has been repudiated).

⁸⁵ See *In re Fisher*, 421 F.3d at 1371 (defining specific and substantial utility in terms of significant, presently available, particular, and well-defined benefit to the public, but providing no guidance on what should be considered in determining if an invention provides a benefit to the public).

⁸⁶ See Civ. A. No. CA3-85-2573-D, 1988 WL 212501, at *1 (N.D. Tex. 1988) (considering the patentability of a radar signal detector used to circumvent the law). The court held that a radar signal detector, used primarily to circumvent the law, had patentable utility. *Id.* The court reasoned that only Congress could withdraw patent protection for such devices. *Id.*

⁸⁷ *Id.*

⁸⁸ See *Fuller*, 120 F. at 275–76 (providing anything used to accomplish a good result is useful, even if it can be used and is in fact “oftener” used to accomplish bad results).

⁸⁹ See *id.* at 279 (“[A] state law which prohibits the use of a certain article, which is

the USPTO have directly addressed or determined whether an invention lacks patentable utility if it can be used for illegal purposes.⁹⁰

The second type of patents the USPTO grants are design patents.⁹¹ Under the Patent Act, “[w]hoever invents any new, original[,] and ornamental design for an article of manufacture may obtain a patent therefor”⁹² Specifically, design patents protect the ornamental or aesthetic features of an invention.⁹³ A design patent has a term of “fourteen years from the date of grant” and affords the patentee the right to exclude others from making, using, offering to sell, or selling the patented design in the United States, as well as the right to exclude others from importing the patented design into the United States.⁹⁴ Design patent applications are subject to the same patentability requirements of utility patent applications discussed above, except for the utility requirement.⁹⁵

patented, is not in derogation of the inventor’s grant under the patent law.”). Most recently, in *Juicy Whip, Inc. v. Orange Bang, Inc.*, the Federal Circuit reversed a district court’s decision that a post-mix beverage dispenser designed to look like a pre-mix beverage dispenser was not useful because its purpose was to increase sales by deception. 185 F.3d 1364, 1368 (Fed. Cir. 1999). The court indicated “Congress is free to declare particular types of inventions unpatentable for a variety of reasons, including deceptiveness.” *Id.* Thus, the court concluded it could not hold the device unpatentable for lack of utility simply because it had the capacity to fool consumers. *Id.* Further, while the court in *Juicy Whip, Inc.* referred to Justice Story’s definition when defining utility – also noting that “it has not been applied broadly in recent years” – it did not expressly reject it. *Id.* at 1366–67. *See also* *Brenner v. Manson*, 383 U.S. 519, 532–33 (1966) (criticizing Justice Story’s definition of utility for shedding little light on the issue of utility in the context of chemical process claims); *In re Fisher*, 421 F.3d at 1370 (rejecting the applicant’s argument for utility under Justice Story’s definition).

⁹⁰ *See Manual of Patent Examining Procedures* § 2107.01 (Mar. 2014), <http://www.uspto.gov/web/offices/pac/mpep/s2107.html> [<https://perma.cc/SMP7-DNXB>] (instructing examiners to analyze patentable utility under the principles established in *In re Fisher*, but making no mention of morality or illegality in determining an invention’s benefit to the public); Smith, *supra* note 75, at 173 (pointing out that it is unclear what effect the illegality of an invention would have on an evaluation of patentable utility).

⁹¹ *See* GOLDSTEIN & REESE, *supra* note 48, at 418–19 (2012) (explaining the differences between the types of patents granted by the USPTO).

⁹² 35 U.S.C. § 171 (2012).

⁹³ *See* *Carman Indus., Inc. v. Wahl*, 724 F.2d 932, 939 n.13 (Fed. Cir. 1983) (“Utility patents afford protection for the mechanical structure and function of an invention whereas design patent protection concerns the ornamental or aesthetic features of a design.”); *Manual of Patent Examining Procedures* § 1502.01, *supra* note 53 (distinguishing the features utility and design patents protect).

⁹⁴ *See* 35 U.S.C. § 173 (establishing the term of design patents); § 271 (establishing the acts that constitute infringement of a patent).

⁹⁵ *See* § 171 (“The provisions of this title relating to patents for inventions shall apply to patents for designs, except as otherwise provided.”). Design patent protection does not extend to features of the design that are functional. *See* *Lee v. Dayton-Hudson Corp.*, 838 F.2d 1186, 1188 (Fed. Cir. 1988) (“Design patents do not and cannot include claims to the

The last type of patents the USPTO grants are plant patents.⁹⁶ Anyone who “invents or discovers and asexually reproduces any distinct and new variety of plant . . . may obtain a patent therefor . . .”⁹⁷ If granted, the patent covers the entire plant and lasts for a term of twenty years from the date on which the application was filed.⁹⁸ The patent also affords the patentee the right to “exclude others from asexually reproducing the plant, and from using, offering for sale, or selling the plant so reproduced, or any of its parts[,]” as well as the right to exclude others from “importing the plant so reproduced, or any parts thereof, into the United States.”⁹⁹ Plant patent applications are subject to the same patentability requirements of utility patent applications discussed above.¹⁰⁰

structural or functional aspects of the article . . .”). Further, if the design of the invention is primarily functional, the design lacks ornamentality and is, therefore, not patentable subject matter under § 171. *Design Patent Application Guide*, *supra* note 53. Because design patents cannot encompass functional features, design patents do not have to satisfy the utility requirement set forth in § 101. *Lee*, 838 F.2d at 1188. Nonetheless, design patents must satisfy the novelty, non-obviousness, application, and specification requirements set forth in §§ 102, 103, 111, and 112. *See id.* (citing 35 U.S.C. § 171, which indicates that design patents are also subject to the other patentability requirements outlined in Title 35).

⁹⁶ *See* GOLDSTEIN & REESE, *supra* note 48, at 418–19 (providing the three types of patents granted by the USPTO).

⁹⁷ § 161. The Act includes plant patent protection for “cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuber propagated plant or a plant found in an uncultivated state . . .” *Id.* A plant is asexually reproduced when a genetically identical copy of the plant is created without using seeds. *General Information about 35 U.S.C § 161 Plant Patents*, *supra* note 57; MUELLER, *supra* note 46, at 288. Known methods of asexual reproduction include: tissues culture, layering, grafting and budding, and nuclear embryos. *General Information about 35 U.S.C. § 161 Plant Patents*, *supra* note 57. Although not covered by plant patents, sexually reproduced plant varieties can be protected under the Plant Variety Protection Act. MUELLER, *supra* note 46, at 288. However, plants that reproduce sexually are eligible for plant patent protection if they are asexually reproduced. *Manual of Patent Examining Procedures* § 1601 (Nov. 2015), <http://www.uspto.gov/web/offices/pac/mpep/s1601.html> [<https://perma.cc/T3AS-ED9Y>]. Further, both asexually and sexually reproduced plants are eligible for protection under utility patents. *J.E.M. AG Supply, Inc. v. Pioneer Hi-Bred Int’l, Inc.*, 534 U.S. 124, 145 (2001). *See* MUELLER, *supra* note 46, at 288 n.157 (noting plants may be eligible for protection under utility patents).

⁹⁸ *General Information Concerning Patents*, U.S. PAT. & TRADEMARK OFF. (Oct. 23, 2015), <http://www.uspto.gov/patents-getting-started/general-information-concerning-patents#heading-31> [<https://perma.cc/V38L-65QB>]. *See also supra* note 54 and accompanying text (explaining the starting and ending dates of patent terms in further detail).

⁹⁹ § 163. The rights conveyed by a plant patent are limited to a single plant or genome. *General Information about 35 U.S.C. § 161 Plant Patents*, *supra* note 57. Thus, a sport or mutant of the patented plant does not infringe on the patent. *Id.* Furthermore, the Federal Circuit held in *Imazio Nursery v. Dana Greenhouses* that “the scope of a plant patent is the asexual progeny of the patented plant variety.” 69 F.3d 1560, 1568 (Fed. Cir. 1995). Therefore, to establish infringement, the patentee must show that the accused infringer asexually reproduced the progeny of the “original patented parent plant.” MUELLER, *supra* note 46, at 289.

¹⁰⁰ *See General Information about 35 U.S.C. § 161 Plant Patents*, *supra* note 57 (noting the

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In sum, there are three types of patents: utility patents, design patents, and plant patents.¹⁰¹ To be protected by a patent, an invention or discovery must satisfy four requirements: it must encompass patent-eligible subject matter, and it must be new, useful, and non-obvious.¹⁰² The USPTO evaluates whether an invention meets these requirements during the patent application process, known as the patent prosecution process.¹⁰³

2. Patent Prosecution Process

The process of preparing and filing a patent application, and thereafter interacting with the patent examiner to obtain the patent, is called patent prosecution.¹⁰⁴ The interaction process between the applicant and the USPTO begins with the filing of an application.¹⁰⁵ Once

provisions of Title 35 relating to utility patents apply to plant patents and that plant patent applications “must also satisfy the general requirements of patentability”); *Manual of Patent Examining Procedures* § 1602 (Nov. 2015), <http://www.uspto.gov/web/offices/pac/mpep/s1602.html> [<https://perma.cc/R7TF-SFCW>] (indicating the “rules relating to applications for patent for other inventions or discoveries are also applicable to applications for patents for plants except as otherwise provided”). The subject matter of a plant patent is the new asexually reproduced variety. *General Information about 35 U.S.C § 161 Plant Patents*, *supra* note 57. Plant patent applications must also meet the novelty and non-obviousness requirements. *Id.* To satisfy the novelty requirement, a plant must “differ from known, related plants by at least one distinguishing characteristic, which is more than a difference caused by growing conditions or fertility levels, etc.” *Id.*

¹⁰¹ See GOLDSTEIN & REESE, *supra* note 48, at 418–19 (outlining the types of patents granted by the USPTO).

¹⁰² See § 101 (listing patentable subject matter and providing for the utility requirement); § 102 (setting forth the novelty requirement); § 103 (establishing the nonobviousness requirement).

¹⁰³ See MUELLER, *supra* note 46, at 42 (explaining what the patent prosecution process is and how it works); see also *infra* Part II.B.2 (describing in detail the patent prosecution process).

¹⁰⁴ See *id.* (defining prosecution as “the process of preparing and filing an application in the USPTO and thereafter interacting with the agency in order to obtain a U.S. patent”).

¹⁰⁵ See *id.* (asserting the prosecution process begins when the application is filed). Two types of applications can be filed: provisional and nonprovisional applications. *Id.* *General Information Concerning Patents*, *supra* note 98 (describing the requirements and different types of applications for a patent). Nonprovisional applications are substantively examined by the USPTO, while provisional applications are not. See MUELLER, *supra* note 46, at 43 (noting provisional applications are not substantively examined); *General Information Concerning Patents*, *supra* note 98 (stating provisional applications are not examined on their merits). Provisional applications became available on June 8, 1995 with the purpose of lowering the costs of first patent filings. *General Information Concerning Patents*, *supra* note 98. When submitting a provisional application, contrary to nonprovisional applications, an applicant is not required to submit claims or an oath of declaration. *Id.* The only requirement is a filing fee and a cover sheet indicating the application is provisional in nature. *Id.* After filing a provisional application, the applicant has up to twelve months to file a nonprovisional application. *Id.* The USPTO will deem the application abandoned if the applicant fails to file a nonprovisional application. *Id.* Filing a provisional application provides the applicant

an application is accepted as complete, a USPTO examiner is assigned to the application.¹⁰⁶

First, the examiner reviews the content of the application and decides if it meets the requirements of 35 U.S.C § 111(a).¹⁰⁷ Next, the examiner considers whether the invention claimed satisfies the various statutory requirements for patentability.¹⁰⁸ Depending on the determinations made by the examiner, the examiner may allow all the claims of the application, reject all the claims, or allow some claims and reject others.¹⁰⁹ If the examiner determines the application does not meet one or more of the requirements, the examiner will explain the reasons for his rejection of the claims in an office action.¹¹⁰ The applicant has up to six months from the mailing date on the office action to either amend the claims or to argue against the objections.¹¹¹ Thereafter, the examiner reexamines the

with the opportunity to establish an early effective filing date. *Id.* Meaning the applicant may rely on the filing date of the provisional application as the priority date for the invention claimed in the later filed nonprovisional application. MUELLER, *supra* note 46, at 43. Thus, in assessing the novelty and nonobviousness of the invention, the examiner is required to consider only prior art with effective dates earlier than the filing date of the provisional application. *Id.* Importantly, the patent, if granted, will expire twenty years from the filing date of the nonprovisional application—not twenty years from the filing date of the provisional application. *Id.* at 44. Hence, the twelve-month period between applications does not shorten the patent term. *Id.*

¹⁰⁶ See *Patent Process Overview*, U.S. PAT. & TRADEMARK OFF. (Oct. 27, 2015), <http://www.uspto.gov/patents-getting-started/patent-process-overview> [<https://perma.cc/4WMV-L5ZJ>] (denoting an application is assigned for examination once it is accepted as complete). If an application filed is incomplete, the applicant is notified and given an opportunity to complete the application. *Id.* If the applicant fails to complete the application within the specified period, the application is “returned or otherwise disposed of.” *Id.*

¹⁰⁷ See *id.* (indicating the examiner reviews the content of the application to determine if it includes the requirements set forth in 35 U.S.C. § 111(a): a specification, a drawing, and an oath or declaration); MUELLER, *supra* note 46, at 45 (explaining an examiner first determines if the application satisfies the disclosure and claiming requirements).

¹⁰⁸ See MUELLER, *supra* note 46, at 45 (specifying the examiner considers whether the invention is patentable subject matter, useful, new, and nonobvious).

¹⁰⁹ See *id.* (adding that, depending upon the determinations made by the examiner, he may allow certain claims and reject others, or allow all the claims or reject all the claims).

¹¹⁰ See *id.* (noting the examiner conveys and explains all of his determinations to the applicant in an official document); *Patent Process Overview*, *supra* note 106 (“If the examiner does not think your application meets the requirements, the examiner will explain the reason(s).”). This is known as the first office action. MUELLER, *supra* note 46, at 46. It takes approximately two years after filing the application to receive the first office action. *Id.*

¹¹¹ See 35 U.S.C. § 132(a) (2012) (outlining an applicant’s options in response to a notice of rejection); see also MUELLER, *supra* note 46, at 46 (stating an applicant has a period of six months to respond to the first office action); *Patent Process Overview*, *supra* note 106 (indicating the applicant has an opportunity to amend the claims or “argue against the examiner’s objections”). If the applicant does not respond to the office action within the required time, the application is deemed abandoned. *Patent Process Overview*, *supra* note

application and issues a second office action, which is known as the Final Action.¹¹² In the response, the applicant must overcome all the objections.¹¹³ Nonetheless, if the Final Action rejects a claim for a second time or the applicant disagrees with the rejections, the applicant may appeal to the Patent Trial and Appeal Board (“PTAB”), file a request for continued examination (“RCE”), or file a “continuing application.”¹¹⁴ If at any time during the process the examiner determines the invention is entitled to a patent, the examiner will issue a Notice of Allowance.¹¹⁵ Approximately three months after the applicant pays for an issuing fee, the USPTO will issue the patent.¹¹⁶

C. Marijuana and Patent Law

There are a wide variety of inventions the marijuana industry could seek to protect under design, plant, or utility patents. First, inventors could apply for design patents to protect the ornamental designs of items used in the marijuana industry.¹¹⁷ Second, inventors could apply for plant

106. Specifically, in the response, the applicant may “traverse” the rejections or narrow the scope of the claims to overcome the rejection. *See id.* (noting that when responding to the examiner’s rejections, the applicant can make arguments for patentability (“traverse”) to overcome the rejection or narrow the scope of the claims by amending them to avoid the prior art). When the applicant attempts to traverse a rejection, the applicant submits evidence in support thereof. *Id.* The applicant may change the wording of the claims, add new claims, or amend the written description as long as no new matter is added. *Id.*

¹¹² *See* MUELLER, *supra* note 46, at 47 (asserting the examiner reexamines the application once the applicant responds to the first office action). Like the first office action, the Final Action can allow all the claims of the application, reject all the claims, or allow some of the claims and reject others. *Id.*

¹¹³ *See Patent Process Overview, supra* note 106 (providing an applicant has to overcome all of the examiner’s rejections in his response to a Final Action). This time, however, the applicant cannot argue against the objections. *See* MUELLER, *supra* note 46, at 47 (indicating an applicant cannot argue the rejections asserted in a Final Action).

¹¹⁴ *See* § 134 (“An applicant for a patent, any of whose claims has been twice rejected, may appeal from the decision of the primary examiner to the Patent Trial and Appeal Board, having once paid the fee for such appeal.”); MUELLER, *supra* note 46, at 47 (stating that after the Final Action, an applicant can request for continued examination or file a second or “continuing” application). Requests for continued examinations (“RCEs”) and “continuing” applications are beyond the scope of this Note; however, *see* MUELLER, *supra* note 46, at 47–48 for a detailed explanation of these options.

¹¹⁵ *See* § 151 (noting the Office issues a Notice of Allowance when the applicant is entitled to a patent); *see also* MUELLER, *supra* note 46, at 48 (“Whenever in the process the examiner determines that the applicant is entitled to a patent on some or all of the claims, he will send the applicant a Notice of Allowance so indicating.”).

¹¹⁶ *See* MUELLER, *supra* note 46, at 48 (indicating the applicant must pay an issue fee within three months to obtain the patent).

¹¹⁷ *See* Neil Juneja, *Patent Law in the Marijuana Industry*, MARIJUANA VENTURE (Nov. 20, 2014), <http://www.marijuanaventure.com/patent-law-marijuana-industry/> [<https://perma.cc/Z8VA-8SZN>] (noting bongs, vaporizers, packaging for edibles, and

patents to protect newly developed varieties of the marijuana plant, like the patent Holmes is requesting for his Otto II medical-grade marijuana strain.¹¹⁸ Third, inventors could seek utility patents having claims directed to either marijuana plants or marijuana-related technologies.¹¹⁹ Marijuana plants themselves are also protectable under a utility patent.¹²⁰

There are two legality concerns surrounding patent applications claiming marijuana strains or marijuana-related inventions, relating to the use and subject matter of the invention.¹²¹ First, some of the inventions can be used only for illegal purposes under federal law.¹²² Specifically, inventions particularly designed to be used in association with marijuana, and that can only be used for such purpose, would only be useful for illegal purposes.¹²³ Nonetheless, some of the inventions can be used

marijuana-related glassware are among the products that could be protected under design patents).

¹¹⁸ See Blevins, *supra* note 1 (telling Ben Holmes's story and his desire to obtain a patent protecting his Otto II medical-grade marijuana strain which, if granted, would be the first marijuana plant patent); see also Victoria Slind-Flor, *Roche, Marijuana, Bakken, MakeMyTrip: Intellectual Property*, BLOOMBERG BUS. (Jan. 5, 2015), <http://www.bloomberg.com/news/articles/2015-01-05/roche-bakken-fleetmanager-makemytrip-intellectual-property> [<https://perma.cc/4MQR-K84K>] (noting a Colorado marijuana seed producer has applied for the first U.S. plant patent for marijuana).

¹¹⁹ See Juneja, *supra* note 117 (providing that methods for breeding and producing specialty cannabis, software systems for managing cannabis crops, methods for infusing products with marijuana and the machines used in the process, methods of making edibles, and cannabis extraction devices are among the technologies that could be protected with a utility patent); see also Pat. App. No. 20150165030 (June 9, 2016), <http://www.google.com/patents/US20150165030> [<https://perma.cc/289X-NABL>] (describing an application for a "Method for Making and Storing Stable Cannabinoid Compositions and Method for Treatment Using Such Compositions").

¹²⁰ See *J.E.M. AG Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 145 (2001) (holding both asexually and sexually reproduced plants are eligible for protection under utility patents); MUELLER, *supra* note 46, at 288 n.157 (noting plant-related inventions qualify as patentable subject matter under 35 U.S.C. § 101); *General Information about 35 U.S.C. § 161 Plant Patents*, *supra* note 57 (asserting the USPTO accepts utility patent applications with claims to plants and seeds); *Manual of Patent Examining Procedures* § 2105, (Mar. 2014), <https://www.uspto.gov/web/offices/pac/mpep/s2105.html> [<https://perma.cc/QYF4-JRTQ>] (indicating patentable subject matter under 35 U.S.C. § 101 includes plant breeds).

¹²¹ See Matthew Sean Tucker, *Useful Patent for Some Legitimate Purpose*, TUCKER IP (Dec. 6, 2013), <http://www.tuckeriplaw.com/useful-patent/> [<https://perma.cc/7D93-LDZR>] ("If the invention claimed by the patent application can only be used for an illegal purpose under federal law, then the invention would likely be interpreted by the patent office [as] lacking utility, i.e., lacking usefulness, and therefore be rejected."); see also Davis, *supra* note 8 (explaining some lawyers think the USPTO is "unlikely to allow patent protection for a substance the federal government has deemed illegal").

¹²² See Blevins, *supra* note 1 (reporting the USPTO has rejected cannabis-related patents because the invention has no useful purposes since its use violates federal law); see also Tucker, *supra* note 121 (commenting a "crafty" patent attorney should be able to obtain a marijuana-related patent if she describes and claims non-illegal uses for the invention).

¹²³ See Tucker, *supra* note 121 ("[A] machine specifically designed—and having only one

outside the marijuana industry.¹²⁴ Second, the subject matter of some marijuana-related inventions is illegal; meaning the invention itself is illegal.¹²⁵ Finally, in some cases, the application claims illegal subject matter and practicing the invention is illegal.¹²⁶

Interestingly, the USPTO has already issued patents that involve chemicals isolated from the marijuana plant, as well as patents covering smoking paraphernalia.¹²⁷ This suggests the USPTO is willing to issue patents “around the edges of marijuana.”¹²⁸ However, attorneys argue that the USPTO will not be as willing to grant a patent claiming the plant itself or a patent protecting an invention that can only be used in relationship with marijuana.¹²⁹ Therefore, plant patents and utility

purpose—to cultivate [a] new [marijuana] strain would not be patentable.”). For example, a method of cultivating a specific marijuana strain that would only work for cultivating that specific marijuana strain is only useful for the illegal activity of growing marijuana.

¹²⁴ See Juneja, *supra* note 117 (stating for example, bongs and vaporizers can be used with legal products, such as oils or tobacco).

¹²⁵ See Davis, *supra* note 8 (stating attorneys believe the USPTO will not allow patents protecting a substance that is illegal under federal law); Forest, *Cannabis: Patently Useless?*, DRUG L. & POL’Y (Feb. 25, 2015), <https://druglawandpolicy.wordpress.com/2015/02/25/cannabis-patently-useless/> [https://perma.cc/GA3G-NPR2] (questioning whether the USPTO would be willing to grant patents on something that is illegal). One example is a patent claiming a strain of cannabis. See Blevins, *supra* note 1 (reporting the USPTO has rejected cannabis-related patents because marijuana is illegal); Davis, *supra* note 8 (quoting attorney David Resnick from Nixon Peabody LLP, who thinks the USPTO will say: “[T]his is illegal under federal law, and we’re not going to promote it . . .”). The marijuana strain, the subject matter of the invention, is in and of itself illegal. See *supra* note 8 and accompanying text (explaining marijuana is a Schedule I substance, and thus, manufacturing, distributing, dispensing, or possessing marijuana is illegal). Another example is a method for breeding specialty cannabis, since the subject matter of the invention, breeding cannabis, is illegal. See *id.* (noting it is illegal to manufacture marijuana).

¹²⁶ See Tucker, *supra* note 121 (explaining a machine specifically designed to cultivate marijuana would not be patentable). An application claiming a method for cultivating a specific marijuana strain that would only work for cultivating that specific marijuana strain, would be useful for illegal purposes and its subject matter—cultivating marijuana strains—would also be illegal. See 21 U.S.C. § 841 (2012) (exemplifying it is illegal to manufacture and possess marijuana).

¹²⁷ See *Patent Application Full Text and Image Database*, U.S. PAT. & TRADEMARK OFF. (Oct. 28, 2015), <http://appft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetacgi%2Fsearch-bool.html&r=0&f=S&l=50&TERM1=marijuana&FIELD1=&co1=AND&TERM2=cannabis&FIELD2=&d=PG01> [https://perma.cc/F9FU-XB2H] (listing all the marijuana-related patent applications pending at the USPTO); *Patents Related to Cannabis*, CANNABIS RES. A TO Z (Oct. 28, 2015), <http://www.calgarycmm.com/cannabispatents.htm> [https://perma.cc/QF2S-LQEP] (listing patents related to cannabis that have issued between 2000–2013).

¹²⁸ Davis, *supra* note 8. For example, the office might be willing to grant a patent on a software system for managing marijuana crops. *Id.*

¹²⁹ See *supra* note 8 and accompanying text (suggesting the USPTO would not be willing to grant patents on inventions without any legal uses).

patents with claims directed to the plant “face [the] tough[est] road at [the] USPTO.”¹³⁰

III. ANALYSIS

Recently, the USPTO started receiving applications for patents seeking to protect new strains of marijuana and marijuana-related technologies.¹³¹ These applications have followed state legislative decisions legalizing marijuana for medical and recreational use.¹³² However, marijuana remains illegal under federal law, and thus, many attorneys argue it is unlikely the USPTO will issue patents protecting marijuana-related inventions.¹³³

This Part of the Note analyzes the patentable utility of marijuana-related inventions and suggests illegality should not affect the patentable utility of an invention.¹³⁴ First, Part III.A examines the grounds of rejection that the USPTO could assert to deny marijuana-related patent applications for lack of patentable utility based on the drug’s classification as an illegal substance under federal law.¹³⁵ Second, Part III.B analyzes case law to determine whether there is a sufficient legal basis for a rejection for lack

¹³⁰ See Davis, *supra* note 8 (discussing why marijuana plant patents “face [a] tough road at [the] USPTO”).

¹³¹ See Blevins, *supra* note 1 (telling Ben Holmes’s story and describing his plant patent application for Otto II, a medical-grade marijuana strain); Davis, *supra* note 8 (indicating the USPTO has received patent applications seeking to protect new types of marijuana plants); Pat. App. No. 20150165030, *supra* note 119 (claiming a “Method for Making and Storing Stable Cannabinoid Compositions and Method for Treatment Using Such Compositions”); *Patent Application Full Text and Image Database*, *supra* note 127 (providing a list of all the marijuana-related patent applications pending before the USPTO).

¹³² See Davis, *supra* note 8 (noting the USPTO started receiving patent applications relating to marijuana plants after Colorado and Washington legalized the recreational use of marijuana); see generally *State Medical Marijuana Laws*, *supra* note 6 (reporting a total of twenty-three states and the District of Columbia and Guam have legalized the use of marijuana for medical use); Todd Garvey & Brian T. Yeh, *State Legalization of Recreational Marijuana: Selected Legal Issues*, CONG. RES. SERV. (Jan. 13, 2014), <http://www.fas.org/sgp/crs/misc/R43034.pdf> [<https://perma.cc/DT32-YESK>] (stating Colorado and Washington became the first states to legalize marijuana for recreational use).

¹³³ See Davis, *supra* note 8 (citing intellectual property attorneys that argue the USPTO will not issue patents protecting an illegal substance, including David Resnick of Nixon Peabody LLP, John Dragseth of Fish & Richardson PC, and Douglas Sorocco of Dunlap Codding). *But see id.* (noting other attorneys have pointed out that “simply because something is illegal does not make it ineligible for a patent and that patents on marijuana strains may be permissible”).

¹³⁴ See *infra* Part III.A–B (evaluating the possible grounds of rejection the USPTO could potentially assert in denying marijuana-related patent applications and the legal basis for these grounds).

¹³⁵ See *infra* Part III.A (considering the arguments the USPTO could assert to deny marijuana-related patent applications).

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of patentable utility based on an invention's illegality.¹³⁶ Next, Part III.C applies the legal basis evaluated in Part III.B to marijuana-related patent applications to determine whether they have patentable utility.¹³⁷ Last, Part III.D proposes even though the USPTO may have sufficient legal basis to reject marijuana-related inventions for lack of utility based on marijuana's classification as an illegal substance, illegality should not play a role in patent law.¹³⁸

A. *Grounds of Rejection the USPTO Could Assert to Deny Marijuana-Related Patent Applications*

The USPTO could potentially deny marijuana-related patent applications for failure to satisfy any of the patentability requirements: patent-eligible subject matter, novelty, utility, and non-obviousness.¹³⁹ However, this Note only focuses on grounds of rejection for lack of patentable utility based on marijuana's status as a controlled substance under federal law.¹⁴⁰ Under *In re Fisher*, an invention must provide a significant, presently available, well-defined, and particular benefit to the public to satisfy the utility requirement.¹⁴¹ Accordingly, the USPTO could assert that marijuana-related inventions lack utility because they provide no benefit to the public.¹⁴² In making this argument, the USPTO would

¹³⁶ See *infra* Part III.B (examining the legal basis for the arguments the USPTO could assert to deny marijuana-related patent applications).

¹³⁷ See *infra* Part III.C (analyzing the role of illegality and morality in patent law).

¹³⁸ See *infra* Part III.D (concluding illegality and morality do not and should not play a role in patent law).

¹³⁹ See *supra* note 110 and accompanying text (indicating a patent application can be denied for failure to satisfy any of the patentability requirements).

¹⁴⁰ See *infra* Part III.A (discussing grounds of rejection for failure to satisfy the utility requirement). Historically, immoral patents were invalidated for lack of patentable utility pursuant to the moral utility doctrine. See *supra* note 78 and accompanying text (discussing the moral utility doctrine case law).

¹⁴¹ 421 F.3d 1365, 1371 (Fed. Cir. 2005) (defining utility in terms of substantial and specific utility); see also *Brenner v. Manson*, 383 U.S. 519, 534 (1966) ("The basic quid pro quo contemplated by the Constitution and the Congress for granting a patent monopoly is the benefit derived by the public from an invention with substantial utility.") (emphasis added). Douglas J. Sorocco, a director and shareholder at Dunlap Coddling, also suggests marijuana-related applications "will be highly scrutinized as to the scope and quality of disclosure and many marijuana companies may find that the patent office will judge their applications scientifically inadequate . . ." See Ciccattelli, *supra* note 7 (interviewing Sorocco regarding the patentability of marijuana plants).

¹⁴² See *supra* Part II.B.2 (providing an overview of the patent prosecution process and explaining that a patent examiner will determine whether the patent application satisfies all the patentability requirements, including the utility requirement); see generally Tucker, *supra* note 121 ("If the invention claimed by the patent application can only be used for an illegal purpose under federal law, then the invention would likely be interpreted by the patent office as lacking utility . . ."); Davis, *supra* note 8 (noting the USPTO could cite the drug's

rely on the federal government's classification of marijuana as an illegal substance and contend the public can derive no benefit from the invention because either the invention itself is illegal or practicing the invention would be illegal.¹⁴³

However, an invention only needs to have one legitimate use to satisfy the utility requirement.¹⁴⁴ To counter the USPTO's argument, an applicant could argue that the invention satisfies the utility requirement because using the invention would be legal in the states that have legalized marijuana; therefore, the invention would have at least one legitimate use.¹⁴⁵ The USPTO would have two rebuttal arguments. First, the USPTO could point out federal law trumps state law, and thus, in the Office's eyes, marijuana-related inventions are illegal and can only be used for

classification as illegal to reject an application for a marijuana-related patent).

¹⁴³ See *supra* Part II.B.2 (indicating that when an examiner determines a patent application fails one of the statutory requirements for patentability, the examiner will explain the reasons for such failure in an Office Action); see also *supra* note 121 and accompanying text (explaining why marijuana related inventions could serve illegal purposes). For example, if the application relates to a technology that will be used in association with marijuana, such as a method for breeding and producing specialty cannabis, the USPTO would claim the invention provides no benefit to the public, and thus, lacks utility because the invention will be used for illegal purposes. See 21 U.S.C. § 841 (2012) (criminalizing the possession and manufacturing of marijuana). On the other hand, if the application is either a plant patent application or a utility application with claims directed to a plant, for example, a method for using a certain amount of cannabinoid to treat a disease, the USPTO would argue the invention provides no benefit to the public, and thus, lacks utility because the invention itself is illegal. See § 812 (listing marijuana as a controlled substance). The invention itself would be illegal because manufacturing or possessing "any material, compound, mixture, or preparation, which contains any quantity of [marijuana], or which contains any of [its] salts, isomers, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible," is unlawful. §§ 812, 841. Furthermore, for applications of the latter type that specifically claim a medical benefit, the USPTO would have an even stronger argument because marijuana's classification under federal law as a Schedule I substance is made on a determination that it has "no currently accepted medical use." § 812. Accordingly, the utility claimed by the applicant would be non-existent in the eyes of the USPTO, a federal agency. *But see* Davis, *supra* note 8 (noting attorneys have pointed out "simply because something is illegal doesn't make it ineligible for a patent and that patents on marijuana strains may be permissible").

¹⁴⁴ See *Juicy Whip, Inc. v. Orange Bang, Inc.*, 185 F.3d 1364, 1366 (Fed. Cir. 1999) ("An invention is 'useful' under Section 101 if it is capable of providing some identifiable benefit."); *Fuller v. Berger*, 120 F. 274, 275 (7th Cir. 1903) ("[E]verything [is] useful within the meaning of the law, if it is used (or is designed and adapted to be used) to accomplish a good result, though in fact it is oftener used (or is as well or even better adapted to be used) to accomplish a bad one . . ."); see also Smith, *supra* note 75 (explaining that following the Seventh Circuit's decision in *Fuller v. Berger*, courts would find that an invention satisfies the utility requirement if the device has legal uses).

¹⁴⁵ See NAT'L CONF. OF ST. LEGIS., *supra* note 6 (noting a total of twenty-three states and the District of Columbia and Guam have legalized the use of marijuana for medical use).

illegitimate purposes.¹⁴⁶ Second, even if federal law did not trump state law in this case, the rights conveyed by a patent are established under federal law.¹⁴⁷ Accordingly, the USPTO could argue it has no choice but to accept Congress's determination that marijuana has no recognized benefit to the public and no legitimate purpose or use, so long as marijuana remains a Schedule I substance under federal law.¹⁴⁸

Even though the USPTO's contentions sound persuasive, they are entirely hypothetical because neither the USPTO nor courts have had to determine whether an invention lacks patentable utility because its subject matter or its use is illegal under federal law while legal under state laws.¹⁴⁹ Accordingly, Part III.B examines existing case law to determine whether the USPTO or courts would have sufficient legal basis for denying applications because an invention lacks legal utility.¹⁵⁰

B. What Is the Legal Basis for Denying or Invalidating Patents for Lack of Moral or Legal Utility?

Neither courts nor the USPTO have had to determine whether an invention lacks patentable utility because its subject matter and/or its use is illegal under federal law while legal under state laws.¹⁵¹ Accordingly,

¹⁴⁶ See Blevins, *supra* note 1 (“[F]ederal law trumps state law.”).

¹⁴⁷ See § 1338(a) (granting district courts original jurisdiction over civil actions “arising under any Act of Congress relating to patents” and denying state courts jurisdiction over claims for relief “arising under any Act of Congress relating to patents”); see also Margo A. Bagley, *The New Invention Creation Activity Boundary in Patent Law*, 51 W. & MARY 577, 606 (2009) (“The right to exclude granted to a patentee is a right granted under the federal patent laws.”).

¹⁴⁸ See Davis, *supra* note 8 (noting the USPTO could “expressly cite the classification of the drug as illegal” to reject an application for a patent on the marijuana plant).

¹⁴⁹ See *id.* (“[T]here has never been a precisely analogous situation where a substance is legal in some states, but still technically illegal nationwide.”); see also Smith, *supra* note 75 (noting federal courts have never addressed what effect, if any, outright illegality or banning of the subject matter of an invention by Congress would have on the determination of patentable utility); *infra* Part III.A.1-2 (discussing the possible legal basis the USPTO could rely on to reject patents on illegal subject matter and explaining how the cases are not on point). According to a Vice News article, “[a] spokesperson for the US Patent and Trade Office confirmed that officials are now accepting and processing patent applications for individual varieties of cannabis, along with innovative medical uses for the plant and other associated inventions.” Walters, *supra* note 1. The article further indicated the spokesperson noted “no special statutory requirements or restrictions applied to marijuana plants.” *Id.*

¹⁵⁰ See *infra* Part III.B.1 (evaluating the legal grounds for a rejection for lack of legal utility).

¹⁵¹ See *supra* note 85 and accompanying text (noting uncertainties regarding illegality and patentable utility); see also *In re Fisher*, 421 F.3d 1365, 1371 (Fed. Cir. 2005) (specifying that under the utility standards set forth in *Brenner*, specific and substantial utility refers to a significant, presently available, particular, and well-defined benefit to the public, but providing no guidance on what should be considered in determining if an invention provides a benefit to the public).

there is no federal court precedent directly applicable to this rejection.¹⁵² Nonetheless, some of the cases on the moral utility doctrine's application to gambling devices provide important insight as to what would be the effect of a declaration of illegality by Congress on the evaluation of patentable utility.¹⁵³ Consequently, this Part examines relevant moral

¹⁵² See *Manual of Patent Examining Procedures* § 2107.01, *supra* note 90 (indicating patentable utility is analyzed under the principles established in *In re Fisher*, without mentioning whether morality or illegality has to be considered when determining the invention's benefit to the public); Smith, *supra* note 75, at 173 (noting that the effect of illegality on an evaluation of patentable utility is unknown).

¹⁵³ See *supra* notes 86–90 and accompanying text (discussing *Fuller*, *Whistler*, and *Juicy Whip*, three moral utility doctrine cases that allude to what would be the effect of illegality on the patentability of an invention). There is no analysis of the grounds of rejection under the moral utility doctrine because it is assumed the doctrine is dead and courts and the USPTO are not willing to revive the doctrine, as evidenced by the USPTO's reluctance to apply the doctrine when it had the opportunity, and the Manual of Patent Examining Procedure's ("MPEP's") adherence to *In re Fisher*'s definition of patentable utility. See *supra* note 84 and accompanying text (outlining scholarly articles discussing why the moral utility doctrine is no longer good law). Starting in the late 1990s, the USPTO and the courts had several opportunities to deny or invalidate patents on controversial inventions by invoking the moral utility doctrine. Smith, *supra* note 75. The first opportunity arose in 1998 when an inventor filed an application involving "chimeric embryos that contained both human and nonhuman cells." *Id.* The filing of the patent application attracted national media attention and "focused on the moral issue implicated by the[] proposed human-animal hybrids." Keay, *supra* note 78. While the USPTO initially responded by issuing a press release indicating human-animal chimeras were not patentable because, "among other things, they would fail to meet the public policy and morality aspects of the utility requirement," the Office later retracted its stance. Smith, *supra* note 75. Instead, the Office rejected the application on the ground that it constituted non-eligible subject matter. Keay, *supra* note 78; Smith, *supra* note 75. The human-animal chimera patent application was followed by countless controversial applications in the field of biotechnology that included methods for cloning, embryos containing both human and nonhuman cells, and a variety of gene patents. See Smith, *supra* note 75 (discussing the controversies with human cloning patent applications); Keay, *supra* note 78 (analyzing controversial applications in the field of biotechnology). In rejecting or granting these applications, the USPTO made no reference to morality. See Smith, *supra* note 75 (noting that the USPTO rejections were on grounds of ineligible subject matter); Keay, *supra* note 78 (describing the USPTO's rejections under subject matter eligibility grounds). The fact that the Office had several opportunities to reconsider morality in patentable utility, but did not, demonstrates that the office is not comfortable with rejecting patents on such grounds. See Smith, *supra* note 75 (noting the USPTO is not comfortable rejecting patents on a moral basis). Further, the MPEP, which outlines the laws and regulations followed by the USPTO when examining patent applications, makes no reference to morality or Justice Story's definition of utility. See *Manual of Patent Examining Procedures* § 2107, *supra* note 90 (indicating the MPEP does not "constitute substantive rulemaking and hence do[es] not have the force and effect of the law"); *In re Fisher*, 421 F.3d at 1372 (noting courts are willing to give the MPEP "judicial notice" to the extent it does not conflict with the Patent Act); MUELLER, *supra* note 46, at 34 (explaining that the MPEP is very useful in understanding the way the USPTO approaches patentable utility). Most likely, if the USPTO would have wanted to leave the door open to the application of the moral utility doctrine in the future, or for considering public morals

utility doctrine precedent to determine what would be the legal basis for rejections based on a declaration of illegality by Congress.¹⁵⁴

The moral utility doctrine was historically used to invalidate gambling and deceptive inventions.¹⁵⁵ When it came to patents covering gambling devices, while courts referred to the immorality of gambling to invalidate the patents, the courts' reasoning was closely related to strong anti-gambling state laws of the time.¹⁵⁶ Thus, these cases were concerned with illegality as well as morality.¹⁵⁷

The first important insight on a possible rejection for lack of legal utility is provided in *Fuller*.¹⁵⁸ *Fuller* explained that state laws preventing the patentee from practicing his invention did not affect his right to exclude others from using the invention where legal.¹⁵⁹ The court's conclusion appears to suggest that state laws affecting the legality of use of an invention should not affect the patentability of the invention.¹⁶⁰

when determining patentable utility, it would have included it in the Guidelines.

¹⁵⁴ See *infra* Part III.B (determining that a federal declaration of illegality would affect patentable utility in limited circumstances).

¹⁵⁵ See *supra* note 78 and accompanying text (examining cases applying the moral utility doctrine to gambling and deceptive devices and tracing the evolution of the doctrine).

¹⁵⁶ See Keay, *supra* note 78 ("Moral opposition to gambling in the United States was highest around the same time courts were invalidating patents for gambling devices . . . and two strong waves of anti-gambling sentiment led to near prohibition of gambling activities" in the twentieth century); see generally, Roger Dunstan, *History of Gambling in the United States* (Oct. 30, 2015), <http://www.library.ca.gov/crb/97/03/chapt2.html> [<https://perma.cc/E3AA-2TLE>] (examining the history of gambling in North America); George G. Fenich, *A Chronology of (Legal) Gaming in the U.S.*, 30 GAMING RES. & REV. J. 65 (<http://digitalscholarship.unlv.edu/cgi/viewcontent.cgi?article=1223&context=grj>) [<https://perma.cc/WKS6-TM2Q>] (providing a timeline of the development of gaming in the U.S.); G. Robert Blakey & Harold A. Kurland, *The Development of the Federal Law of Gambling*, 63 CORNELL 923, 927-58 (1978) (detailing the history of the evolution of federal gambling laws); see also *Fuller v. Berger*, 120 F. 274, 179-82 (7th Cir. 1903) (Grosscup, dissenting) (examining the morality of gambling).

¹⁵⁷ See *Fuller*, 120 F. at 179-282 (invalidating a gambling-related patent for want of utility based on laws prohibiting gambling and social perceptions that gambling was immoral).

¹⁵⁸ See *id.* at 276 (holding that a bogus-coin detector used with gambling devices did not lack patentable utility simply because it could be used with gambling devices). The court indicated courts should not void patents for want of utility if the defendant proves the invention has been used to accomplish bad results if the court can be convinced the invention can be used to achieve positive results. *Id.*

¹⁵⁹ See *id.* at 279 ("[A] state law which prohibits the use of a certain article, which is patented, is not in derogation of the inventor's grant under the patent law."). The court rejected the accused infringer's argument that the court should deny an injunction because the invention could only be used for illegal purposes under state law. *Id.* The court noted that a device had the requisite utility if it could be used for a good purpose, even if it is most often used to accomplish negative results. *Id.* at 275. *Fuller* provided several examples of devices that have positive and negative purposes, including the colt revolver, steam engines, dynamos, and electric railroads. *Fuller*, 120 F. at 275-76.

¹⁶⁰ See *id.* ("[T]he state law operated wholly upon the inventor's natural right to the use of

However, at the time *Fuller* was decided, gambling, although highly regulated under federal law, was only illegal under most state laws.¹⁶¹ Thus, *Fuller's* conclusion, when analyzed in context, is arguably limited to the patentability of inventions that have illegal uses under state laws, but permitted uses under federal law.¹⁶² Further, the laws at issue in *Fuller* concern only the legality of use of an invention.¹⁶³ *Fuller's* holding is, therefore, only informative on the patentability of inventions that have illegal uses and sheds no light on the patentability of inventions whose subject matter is illegal in some states, but legal in others.¹⁶⁴ Thus, while *Fuller's* holding is instructive on the patentability of an invention that can be used for illegal purposes under state laws, it is impossible to discern whether the court's opinion would change if federal laws also made the use illegal.¹⁶⁵

Nonetheless, *Whistler Corporation v. Autotronics, Inc.* is informative on the effect a federal ban could have on a determination of patentable utility.¹⁶⁶ In *Whistler*, the court held that a radar signal detector primarily used to circumvent the law was patentable, instructing, “[u]nless and until detectors are banned outright, or Congress acts to withdraw patent protection for them, radar detector patentees are entitled to the protection of the patent laws.”¹⁶⁷ *Whistler's* reference to an “outright ban” on the subject matter of the invention, the detector, suggests that an invention

his property, and not at all upon the franchise which the patent grants, which consists altogether in the right to exclude.”) (emphasis added). *Fuller* reasoned that state laws that affected the use of the patented article did not affect the rights granted on the patentee because patent law grants exclusionary rights. *Id.*

¹⁶¹ See *supra* note 156 and accompanying text (examining the state of gambling laws at the time the moral utility doctrine was used to invalidate patents covering gambling devices).

¹⁶² See *supra* note 8 and accompanying text (explaining medical and recreational marijuana is legal in some states but is illegal under federal law, and because patent rights are established under federal law, it is unclear whether the USPTO will issue patents protecting marijuana plants and marijuana-related inventions). At the time *Fuller* was decided, all states but New Mexico had prohibited gambling. *Fuller*, 120 F. at 279. Nonetheless, the federal government had not banned gambling, it simply regulated it. *Supra* note 156 and accompanying text.

¹⁶³ See *Fuller*, 120 F. at 279 (noting that gambling laws affected the inventor's right to use the invention and not the right to exclude others).

¹⁶⁴ See *id.* at 279–80 (examining the patentability of a gambling device at a time in history where gambling was illegal under state laws but permitted under federal law).

¹⁶⁵ See *id.* at 276 (holding that an invention that could be used in association with gambling devices did not lack patentable utility despite state laws banning gambling).

¹⁶⁶ See No. CA3–85–2573–D, 1988 WL 212501, at *1 (N.D. Tex. July 28, 1988) (finding that whether a device used to circumvent the law is patentable is a matter “for the legislatures of the states, or for the Congress, to decide[.]” not the court).

¹⁶⁷ See *id.* (noting only two states have prohibited such devices).

would lack patentable utility if its subject matter were illegal under federal law.¹⁶⁸

Whistler is also informative on whether the patentable utility of an invention would be affected if the invention is useful for purposes banned by Congress but the invention's subject matter is not banned.¹⁶⁹ It may be inferred, from the court's reasoning when scrutinizing the court's choice of words in light of the alleged infringer's arguments, that the patentability of an invention is not affected by a federal or state ban on the use of the invention, so long as the *subject matter* of the invention is not federally banned. Notice the alleged infringer argued that the radar was not patentable because it was *used* for an illegal purpose—to circumvent the law.¹⁷⁰ The alleged infringer did not argue the invention itself was illegal—only its application.¹⁷¹ Yet, the court's reasoning focused on a ban by Congress on the *subject matter* of the invention and not its application.¹⁷² This suggests the court is not concerned with the legality of an invention's applications but with the legality of the invention's subject matter.¹⁷³ Thus, it appears the court would reason that an invention has patentable utility even if it is useful for purposes banned by Congress, as long as its

¹⁶⁸ See *id.* (explaining that even though two states have prohibited the use of radar signal detectors, the court cannot withdraw patent protection from such devices until Congress does so because that is a matter for the legislatures of the states or for Congress to decide).

¹⁶⁹ See *id.* (concluding a radar detector used primarily and exclusively for the illegal purpose of circumventing the law was patentable until Congress banned these devices).

¹⁷⁰ See *id.* (commenting in response to the defendant's defense of lack of utility, the court below noted the "incongruity" of the plaintiff's request to protect a device used to circumvent the law). Plaintiff presented evidence that the detectors had alternative legal uses, but the court decided that the "primary and almost exclusive purpose" of the radar detectors was to "circumvent law enforcement attempts to detect and apprehend those who violate the law." *Id.*

¹⁷¹ See *Whistler Corp.*, 1988 WL 212501, at *1 (rejecting the infringer's argument that the invention's use—circumventing the law—was illegal and therefore, the radar lacked patentable utility). The infringer, however, did not argue that the invention, the radar, was illegal. *Id.*

¹⁷² See *id.* (reasoning a ban on the detectors, not the use of the detectors, would prevent them from being patentable). The court stated that radar detectors are patentable "unless and until detectors are banned outright," instead of indicating that they are unpatentable unless and until the *use of detectors* is banned outright. *Id.* (emphasis added).

¹⁷³ See *id.* (concluding that signal radar detectors are patentable, despite being useful primarily for illegal purposes, until Congress bans detectors or withdraws patents protection). This conclusion is consistent with the Federal Circuit's statements in *Juicy Whip* indicating the utility doctrine was not in place for the USPTO or courts to serve as arbiters of what inventions are designed to serve illegal purposes. *Juicy Whip, Inc. v. Orange Bang*, 185 F.3d 1364, 1368 (Fed. Cir. 1999). The court concluded it is Congress's job to determine whether a particular invention should not be patentable. *Id.* Similarly, the court in *Whistler* questioned the possibility of "being required to referee a [public interest] contest among entities that manufacture and sell products." *Whistler Corp.*, 1988 WL 212501, at *1.

subject matter remains legal.¹⁷⁴ It also appears the court would not change its reasoning if the invention could *only* be used for illegal purposes under federal law.¹⁷⁵ This can also be inferred from the specific words used in the court's reasoning, since it noted the primary and almost exclusive use of the detector was to circumvent the law, but it nonetheless deemed the device patentable.¹⁷⁶

Overall, *Fuller* is informative of how state laws concerning the use of an invention would affect a determination of patentable utility.¹⁷⁷ Specifically, under *Fuller*, state laws prohibiting the use of an invention should not affect the patentability of an invention.¹⁷⁸ *Fuller*, however, sheds no light on whether an invention would be patentable if federal laws also prohibited the use of the invention.¹⁷⁹ *Whistler*, however, is specifically revealing of how a congressional ban on the subject matter of

¹⁷⁴ See *supra* note 171 and accompanying text (explaining that in *Whistler*, while the accused infringer argued the invention lacked patentable utility because it was useful for the illegal purpose of circumventing the law, the court nonetheless ruled the invention was useful because its subject matter, a radar detector, was not illegal under federal law).

¹⁷⁵ See *Whistler Corp.*, 1988 WL 212501, at *1 (concluding that a signal radar detector whose "primary and almost exclusive purpose" is to circumvent the law has the requisite patentable utility because the subject matter of the invention, the radar, is not illegal under federal law).

¹⁷⁶ See *id.* (holding that despite the fact the "primary and almost exclusive purpose" of the radar was to illegally circumvent the law, the radar was patentable unless and until Congress made a determination to the contrary). This is consistent with *Fuller* and *Juicy Whip*. In *Fuller*, the court noted that an invention does not lack patentable utility if the invention is used for vicious purposes, as long as the invention is capable of good uses, even if never used for such good purposes. See *Fuller*, 120 F. at 279 ("[E]verything [is] useful within the meaning of the law, if it is used (or designed and adapted to be used) to accomplish a good result, though in fact it is oftener used (or is as well or even better adapted to be used) to accomplish a bad [result]."). In *Juicy Whip*, the court explained that an invention having the capacity to fool the public did not lack utility unless Congress declared that particular type of invention unpatentable. See *Juicy Whip*, 185 F.3d at 1368 ("Congress is free to declare particular types of inventions unpatentable for a variety of reasons, including deceptiveness. Until such time as Congress does so, however, we find no basis in section 101 to hold that inventions can be ruled unpatentable for lack of utility simply because they have the capacity to fool some members of the public.").

¹⁷⁷ See *supra* notes 159, 163 and accompanying text (explaining that *Fuller's* holding suggests state laws concerning the use of an invention do not affect the patentability of the invention). In *Fuller*, the court held that a coin detector used with gambling devices did not lack patentable utility simply because it could be used for illegal purposes under state law. 120 F. at 276.

¹⁷⁸ See *Fuller*, 120 F. at 279 (holding that state laws affecting the use of the invention did not affect the right granted by a patent to exclude others from using the invention).

¹⁷⁹ See *id.* (discussing the effect state laws – and not federal laws – prohibiting the use of an invention would have on a patentee's right to use the invention, but not his right to exclude others). *Fuller* does not address whether an invention would be patentable even if federal laws, whether in contradiction or not with state laws, prohibited the use of the invention. *Id.* at 276, 279–80. It also does not address whether state or federal laws banning the subject matter of an invention would prevent the invention from being patentable. *Id.*

an invention would affect the determination of patentable utility.¹⁸⁰ Particularly, under *Whistler*, an invention would lack patentable utility if its subject matter were illegal under federal law (“outright” ban by Congress).¹⁸¹ *Whistler* also suggests that an invention would not lack utility if it were useful for purposes banned by Congress, as long as the subject matter of the invention remains legal.¹⁸²

As such, *Fuller* and *Whistler* suggest the USPTO may have sufficient legal basis to reject patent applications for lack of legal utility under limited circumstances.¹⁸³ Next, these legal bases are applied to marijuana-related innovations next, to determine whether marijuana-related inventions lack patentable utility.¹⁸⁴

C. *Are Marijuana Plants and Marijuana-Related Inventions Patentable under Fuller and Whistler?*

The USPTO could hypothetically deny marijuana plant patent applications or marijuana-related patent applications for lack of legal utility.¹⁸⁵ Part III.B indicated that based on *Fuller* and *Whistler*, the USPTO could reject patent applications for lack of legal utility under limited circumstances.¹⁸⁶ This Part of this Note discusses the application of the legal bases examined in Part III.B to determine whether marijuana-related inventions are not patentable for lack of legal utility.¹⁸⁷ Even though some marijuana inventions might not be patentable under *Fuller* and *Whistler* because of marijuana’s status as a controlled substance under federal law, this Note recommends that illegality should not affect a determination of patentable utility.¹⁸⁸

¹⁸⁰ See 1988 WL 212501, at *1 (holding that a signal radar detector used to circumvent the law was patentable until Congress decided to the contrary).

¹⁸¹ See *supra* note 170 and accompanying text (concluding that under *Whistler*, an invention would not be patentable for lack of utility if a federal law prohibited the subject matter of the invention).

¹⁸² See *supra* note 173 and accompanying text (explaining that the court’s reasoning focused on a ban by Congress on the subject matter of the invention and not its use as evidenced by the court’s choice of words in light of the infringer’s argument).

¹⁸³ See *supra* Part III.B (analyzing the moral utility doctrine cases of *Fuller* and *Whistler* to determine what would be the effect of a Congressional ban on the patentable utility of an invention).

¹⁸⁴ See *infra* Part III.C (applying the legal grounds outlined in *Fuller* and *Whistler* to marijuana-related inventions to determine whether they lack patentable utility).

¹⁸⁵ See *supra* Part III.A (describing the two possible grounds of rejection the USPTO could assert to deny marijuana-related patent applications).

¹⁸⁶ See *supra* Part III.B (evaluating the effect of a declaration of illegality by Congress on the evaluation of patentable utility).

¹⁸⁷ See *infra* Part III.C (determining the patentability of marijuana-related inventions under *Fuller* and *Whistler*).

¹⁸⁸ See *infra* Part III.D (suggesting that a court deciding on the patentability of marijuana

Pursuant to *Fuller*, state laws concerning the legality of the use of an invention do not affect the patentability of the invention.¹⁸⁹ Thus, under *Fuller*, the fact that using marijuana is legal in some states while illegal in others would have no bearing on the patentable utility of marijuana-related inventions.¹⁹⁰ Nonetheless, *Fuller* provides no insight on whether federal laws regarding the use of an invention would affect the patentability of the invention.¹⁹¹ *Fuller's* holding is arguably limited to the patentability of inventions where state laws prohibit the use of the invention but federal law allows it, whereas the issues surrounding the patentability of marijuana plants and marijuana-related inventions arise from contradictory state and federal laws.¹⁹² Therefore, it is impossible to discern whether marijuana strains and marijuana-related inventions have patentable utility under *Fuller*.

Under *Whistler*, an invention lacks patentable utility if Congress has banned the invention's subject matter.¹⁹³ Thus, pursuant to *Whistler*, marijuana strains would always lack patentable utility and would not be protectable because Congress has banned its subject matter.¹⁹⁴ Similarly, marijuana-related inventions whose subject matter is illegal would also lack patentable utility.¹⁹⁵ Further, under *Whistler*, an invention has

inventions should hold that such inventions do not lack patentable utility simply because marijuana is illegal under federal law).

¹⁸⁹ See *supra* notes 159, 163 and accompanying text (analyzing *Fuller's* holding to determine whether precedent suggests what effect, if any, illegality should play in the determination of patentable utility and concluding the court was not concerned with state laws affecting the use of the invention).

¹⁹⁰ See *supra* note 160 and accompanying text (noting *Fuller* indicated state laws only affect a patentee's natural right to use his invention but do not affect the rights afforded to him by his patent to exclude others from using his invention).

¹⁹¹ See *supra* note 164 and accompanying text (examining *Fuller's* holding in context with the historical background and noting that at the time *Fuller* was decided, state laws criminalized gambling, while federal law simply regulated gambling).

¹⁹² See *supra* note 122 and accompanying text (explicating the legality concerns surrounding the patentability of marijuana strains and marijuana-related inventions).

¹⁹³ See No. CA3-85-2573-D, 1988 WL 212501, at *1 (N.D. Tex. July 28, 1988) ("Unless and until detectors are banned outright, or Congress acts to withdraw patent protection for them, radar detectors patentees are entitled to the protection of the patent laws.").

¹⁹⁴ See 21 U.S.C. § 812 (2012) (criminalizing the possession, manufacture, and distribution of marijuana). For example, the subject matter of Ben Holmes's patent application claiming his Otto II strain is the cannabis strain itself. This strain is illegal under federal law, and thus, under *Whistler*, the Otto II would lack patentable utility. See § 812 (classifying marijuana as a Schedule I substance). Similarly, the subject matter of a utility patent application with claims directed to the plant would be the plant itself. For example, a patent application claiming a method for using Holmes's Otto II strain to treat a disease would lack patentable utility because using medical marijuana is illegal under federal law. See *Marijuana Resource Center, supra* note 36 ("[U]sing marijuana continues to be an offense under Federal law.").

¹⁹⁵ See § 812 (listing marijuana as a prohibited substance under federal law). For example, a patent application claiming a method for breeding specialty cannabis would not be

patentable utility irrespective of the invention being useful for illegal purposes, as long as its subject matter remains legal.¹⁹⁶ Accordingly, marijuana-related inventions whose subject matter is legal would have patentable utility despite having illegal applications or its use resulting in illegal activity.¹⁹⁷

These results are consistent with the attorneys' views discussed earlier—that marijuana-related patent applications that wholly claim illegal subject matter are not patentable, whereas applications claiming “around the edges of marijuana” should be patentable.¹⁹⁸ These results are also supported by the fact that patents have already been granted on certain applications claiming marijuana-related inventions.¹⁹⁹ Therefore,

patentable because the subject matter of the invention, breeding specialty cannabis, is not legal under federal law. See § 841 (providing it is illegal to manufacture and possess marijuana); see also Tucker, *supra* note 121 (indicating a machine specifically designed to cultivate marijuana would not be patentable). As suggested by Tucker, an attorney could get away with claiming an invention related to illegal subject matter by describing the invention in broad terms so that it claims legal subject matter. Tucker, *supra* note 121. For example, the method for breeding cannabis could be claimed as simply a method for breeding specialty plants. See *id.* (indicating “crafty” patent attorneys should be able to obtain a marijuana-related patent if they describe and claim non-illegal uses for the invention). This would not be an option, however, for patents claiming only illegal subject matter, such as marijuana strains plant patent applications. See *id.* (“If the invention claimed by the patent application can only be used for an illegal purpose under federal law, then the invention would likely be interpreted by the patent office [as] lacking utility, i.e. lacking usefulness, and therefore be rejected.”) Therefore inventions particularly designed to be used in association with marijuana—and that can only be used for such purpose—would lack patentable utility. *Id.*

¹⁹⁶ See 1988 WL 212501, at *1 (holding that whether a device used to circumvent the law is patentable is a matter “for the legislatures of the states, or for the Congress, to decide[,]” not the court).

¹⁹⁷ See *supra* note 170 and accompanying text (analyzing *Whistler* and concluding an invention would not be patentable if federal law prohibits the subject matter of the invention). For example, a patent application claiming a method for infusing products with marijuana would be patentable if the method can be used to infuse products with other legal substances. Tucker, *supra* note 121. Notice the subject matter of the invention—the method for infusing products—is legal under both federal and state law. However, the invention could serve illegal purposes if used to infuse products with marijuana. See § 841 (possessing marijuana is illegal under federal law). Other examples of inventions with illegal applications that would nonetheless be patentable include bongs and vaporizers. See Juneja, *supra* note 117 (stating a vaporizer that can be used with legal oils should be patentable). An example of an invention that would lack patentable utility because both its subject matter and use are illegal is a method of cultivating a specific marijuana strain that only works for cultivating that specific marijuana strain. *Id.*

¹⁹⁸ See Davis, *supra* note 8 (quoting John Dragseth of Fish & Richardson PC: “The office might be willing to grant patents ‘around the edges’ of marijuana, such as on a software system for managing marijuana crops, but I think it would have to be legal under federal law before the patent office is going to allow direct patents on marijuana strains”).

¹⁹⁹ See *id.* (quoting Robert Traver of Sheridan Ross PC, who pointed out the USPTO has issued patents on smoking paraphernalia that specifically state that the invention is designed

these results indicate plant patents and utility patents with claims directed to the plant “face [the] tough[est] road at the USPTO.”²⁰⁰ However, illegality should not be considered when determining patentable utility, and thus, all marijuana strains and marijuana-related inventions should not lack patentable utility under *Whistler* because marijuana is illegal under federal law.²⁰¹

D. A Solution for the Future

Under *Fuller* and *Whistler*, plant patents and utility patents with claims directed to the plant are most likely not patentable for lack of legal utility.²⁰² However, the patentability of marijuana strains and marijuana-related inventions under *Fuller* and *Whistler* only reflects the reasoning of one lower court and an appeals court on an issue that is yet to be directly addressed by the USPTO, the Federal Circuit, or the Supreme Court. Specifically, no determination has been made on whether the illegality of an invention or its application affects a determination of patentable utility under the “specific and substantial benefit to the public” utility test set forth in *Brenner*.²⁰³ Therefore, the USPTO could assert marijuana-related inventions lack patentable utility because the illegal invention is incapable of providing any benefit to the public.²⁰⁴ Nevertheless, marijuana-related inventions should not lack patentable utility simply because the invention is illegal or has illegal applications. First, Part III.D.1 recommends, if and when a court hears this issue, it should hold that an invention does not lack patentable utility if its subject matter is illegal or if the invention can be used for illegal purposes.²⁰⁵ Next, Part III.D.2 provides commentary on the holding.

to be used for smoking marijuana). Erich Veitenheimer of Cooley LLP also noted that the USPTO has issued patents for chemicals isolated from marijuana plants. *Id.*

²⁰⁰ See *id.* (exploring why “marijuana patent applications face though road at [the] USPTO”).

²⁰¹ See *supra* Part III.D (recommending courts hold that considering legality when determining patentable utility would be inconsistent with the goals of the patent system); 1988 WL 212501, at *1 (indicating that a Congress ban on the subject matter of an invention would prevent the invention from having the requisite patentable utility).

²⁰² See *supra* Part III.C (applying *Fuller* and *Whistler* to marijuana-related inventions to determine whether the inventions would be patentable despite marijuana’s status as an illegal substance under federal law).

²⁰³ See *supra* note 85 and accompanying text (stating that no court has determined whether an invention provides a specific and substantial benefit to the public despite its illegal status).

²⁰⁴ See Davis, *supra* note 8 (noting that a rejection by the USPTO of a plant patent claiming a marijuana strain could expressly cite the classification of the drug as illegal or just reject it for claiming patent-ineligible subject matter).

²⁰⁵ See *infra* Part III.D.1 (proposing that a court deciding on the patentability of marijuana inventions should hold that an invention, including marijuana-related inventions, does not lack patentable utility simply because the invention’s subject matter is illegal or can be used

1. Rejections for Lack of Legal Utility Are Inconsistent with the Goals of the Patent System

Neither courts nor the USPTO have decided whether an invention lacks patentable utility under the “specific and substantial benefit to the public” utility test set forth in *Brenner* if the invention is useful for illegal purposes.²⁰⁶ This issue, however, will likely reach the courts in the upcoming years due to the influx of patent applications claiming marijuana strains and marijuana-related inventions. While dicta in *Fuller* and *Whistler* could provide the legal basis for the USPTO to deny patents for lack of legal utility, a court hearing the issue should rule that considering legality when determining patentable utility is inconsistent with the goals of the patent system and the rights afforded by a patent. Thus, the USPTO should not deny marijuana-related patent applications for lack of utility simply based on marijuana’s classification as an illegal substance under federal law.

2. Commentary

First, granting a monopoly on an invention whose subject matter is illegal or that can be used for illegal purposes is not inconsistent with the rights granted by a patent. A patent grants negative rights, and therefore, only affords the patentee the right to exclude others from using the invention.²⁰⁷ A patent, however, does not afford the patentee the exclusive right to use the invention. The right to use the invention is a natural right of the inventor and is independent of the legal right to exclude others afforded by the patent.²⁰⁸ Consequently, a patent claiming subject matter

for illegal purposes). This Note proposes a model judicial holding and reasoning instead of a statutory amendment for two reasons. First, patent law is rarely amended, and therefore, a proposed statutory amendment would be inappropriate. See MUELLER, *supra* note 46, at 33. (explaining the Patent Act of 1952 in amended form governs patent law today and that only two main revisions have taken place since its enactment: The Patent Act of 1870 and the Leahy-Smith America Invents Act (“AIA”) in 2011). Second, utility doctrine principles arise almost exclusively from case law, and thus, the patentability of marijuana is most likely to happen via court rulings. MUELLER, *supra* note 46, at 33.

²⁰⁶ See *infra* Part III.D.2 (highlighting the benefits and issues with a court holding that inventions do not lack patentable utility merely because the invention’s subject matter is illegal or because the invention is useful for illegal purposes).

²⁰⁷ See MUELLER, *supra* note 46, at 15 (stating that patents grant negative rights and explaining the negative right to exclude granted by patents).

²⁰⁸ See *Fuller v. Berger*, 120 F. 274, 279 (7th Cir. 1903) (“[S]tate law operates wholly upon the inventor’s natural right to the use of his property, and not at all upon the franchise which the patent grants, which consists altogether in the right to exclude.”). Accordingly, in circumstances where practicing the patent or simply possessing the invention could be illegal, the patentee has the natural right to practice the invention, but he does not have the legal right to do so without possibly facing consequences. See *id.* (explaining that laws

that is illegal or could be used for illegal purposes would grant the patentee the right to keep others from engaging in illegal activity, but it would not grant the patentee the right to engage in illegal activity by practicing his invention. While the natural right to use the invention is affected by laws prohibiting the subject matter or use of the invention, the legal right to exclude others should not be affected.²⁰⁹ For example, if the USPTO granted patents on marijuana strains, it would not be allowing patentees to exclusively engage in illegal activity. It would, however, encourage and allow the patentee to police illegal activity by affording him the right to exclude others from engaging in such illegal activity as a result of using the invention and infringing the patent.²¹⁰

One could argue, however, that even if granting patents does not allow patentees to engage in illegal activity, it encourages and enables others to engage in illegal activity. A patent should disclose an invention well enough to enable others to practice the invention therein once the patent expires. Accordingly, patents covering illegal inventions would allow people to engage in criminal practices unknown to them before the invention was patented. It seems unlikely, however, that criminals would resort to the patent system to select their criminal practices. But, if they did, they would open themselves to an infringement suit. In addition, this is not a problem limited to patents covering illegal inventions. Theoretically, every time a patent is published, whether the invention is illegal or not, competitors are free to copy and practice the inventions disclosed therein. The only thing keeping them from doing so is the possibility of an infringement suit. In the case of criminals benefiting from patents covering illegal inventions, they would not only open themselves to an infringement lawsuit, but also to prosecution for engaging in criminal activity. Hence, this argument relates to patent enforcement and not to the patentability of inventions.

prohibiting the use of the invention only affect the patentees right to use the invention, not his right to exclude). That, however, is collateral and irrelevant to his right under patent law to exclude others from using his invention. *Id.*

²⁰⁹ See *id.* ("His right to use his property is destroyed, but his right to exclude others stands unimpaired.")

²¹⁰ See 35 U.S.C. § 154 (2012) (providing that patents grant "the right to exclude others from making, using, offering for sale, or selling the invention . . ."). Accordingly, it could also be argued that granting monopolies on illegal inventions would be beneficial to the government, since enforcement of the patent would result in private enforcement of the law, helping the police prosecute illegal activity. For example, if Ben Holmes were to obtain a patent on his Otto II strain, he could sue for infringement whomever asexually reproduces the progeny of his strain. MUELLER, *supra* note 46, at 288. If the infringer is located in a state where marijuana remains illegal, Holmes, if successful in his infringement suit, would be preventing the infringer from engaging in illegal activity. This could facilitate the DEA's job.

Similarly, if the USPTO were to deny patent applications on the basis that they involve illegal subject matter or they would lead to illegal activity, the USPTO would be engaging in policing powers, which Congress did not afford.²¹¹ The utility requirement “is not a directive to the USPTO or the courts to serve as arbiters” of what is illegal and what is not, and what inventions people should use and which they should not.²¹² Other agencies, such as the Federal Drug Administration, the Federal Trade Commission, and the DEA, are in charge of protecting consumers from dangerous food or drugs, deceptive products, and the prosecution for the use of illegal substances. In addition, it would be extremely burdensome for the USPTO to have to engage in legality determinations, especially in the case of inventions, like marijuana, which might be legal in some states while illegal in others. Accordingly, it is up to Congress to make an explicit determination that illegal subject matter, and inventions useful for illegal purposes, are not patentable.²¹³ Until Congress does so, courts should maintain that illegal inventions are patentable provided they satisfy the other patentability requirements.

²¹¹ See *Juicy Whip, Inc. v. Orange Bang*, 185 F.3d 1364, 1368 (Fed. Cir. 1999) (“Congress never intended that the patent laws should displace the policing powers of the States, meaning by that term those powers by which the health good order, peace and general welfare of the community are promoted.”). It is not the responsibility of the USPTO to control social behavior by keeping illegal inventions from being patentable. *Id.* Such is the responsibility of the states by creating and enforcing laws. *Id.* Further, the USPTO is not in charge of protecting users from illegal or harmful inventions. *Id.* That is the job of other agencies such as the Federal Trade Commission, the Food and Drug Administration, the police force, or in the case of marijuana, the DEA. *Id.*

²¹² See *id.* (holding a deceptive device had patentable utility and indicating the utility requirement “is not a directive to the Patent and Trademark Office, or the courts to serve as arbiters of deceptive practices”).

²¹³ See *Juicy Whip, Inc.*, 185 F.3d at 1368 (“Congress is free to declare particular types of inventions unpatentable for a variety of reasons”); *Whistler Corp. v. Autotronics, Inc.*, No. CA3-85-2573-D, 1988 WL 212501, at *1 (N.D. Tex. July 28, 1988) (“Unless and until . . . Congress acts to withdraw patent protection for them, radar detector patentees are entitled to the protection of the patent laws.”). In further support of this argument is the fact that Congress has already expressly withdrawn patent protection from inventions relating to atomic weapons. See 42 U.S.C. § 2181(a) (2012) (“No patent shall hereafter be granted for any invention or discovery which is useful solely in the utilization of special nuclear material or atomic energy in an atomic weapon.”). Such an action by Congress demonstrates that patent laws should be given a wide scope, unless Congress makes a determination to the contrary. See *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980) (“Congress contemplated that the patent laws would be given wide scope”). In addition, courts and the USPTO “should not read into the patent laws limitations and conditions which the legislature has not expressed.” *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933). Thus, it would be incorrect for the USPTO to consider legality in determining patentable utility because no such limitation has been provided by the legislature.

Further, the patent system is in place to encourage dissemination of information and promote innovation.²¹⁴ If illegal inventions are not patentable, secrecy would be encouraged and secrecy does not promote progress.²¹⁵ One might argue that illegal inventions are a detriment to society. Yet, an invention does not lack beneficial uses simply because it is illegal. Marijuana is a perfect example since it has been shown that marijuana has medical benefits—just not benefits recognized by the federal government.²¹⁶

Another might argue that Congress could not have intended to encourage innovation in illegal fields. However, laws and morals change with time, and laws are constantly subject to review and amendment. So, while Congress might be concerned with the use of illegal inventions, it also understands that it is in society's best interest to encourage disclosure and innovation in all fields since today marijuana might be illegal, but in the future it might not.²¹⁷ Thus, marijuana inventors should not be denied

²¹⁴ See *Brenner v. Manson*, 383 U.S. 519, 532–33 (1966) (“[O]ne of the purposes of the patent system is to encourage dissemination of information concerning discoveries and inventions.”).

²¹⁵ See *id.* (“[I]nability to patent a process to some extent discourages disclosure and leads to greater secrecy than would otherwise be the case.”); *In re Nelson*, 280 F.2d 172, 181 (C.C.P.A. 1960) (inhibiting dissemination retards progress). Thus, if illegal inventions are patentable, the government will be kept on notice of how technology evolves. Such notice, specifically in areas where it can exercise policing powers, is in the government's best interest.

²¹⁶ See *NIDA Research on the Therapeutic Benefits of Cannabis and Cannabinoids*, NAT'L INST. ON DRUG ABUSE (May 2015), <http://www.drugabuse.gov/drugs-abuse/marijuana/nida-research-therapeutic-benefits-cannabis-cannabinoids> [https://perma.cc/8NNC-W8FP] (listing the results of studies funded by twenty-eight grants and National Institute on Drug Abuse (“NIDA”) revealing the therapeutic advantages of marijuana). Like Joseph D. Summer explained:

Assuming cannabis varieties serve a utilitarian purpose—and medical evidence suggest they do—providing patents for cannabis varieties promotes innovation in an industry ripe with opportunity. Cannabis cultivators will likely develop the best strains in the hopes of achieving legal legitimacy and protection from the federal government. The possibilities for invention and innovation are limitless. Preclusion of cannabis variety patents would likely result in a chilling effect on the cannabis industry as a whole [A]ssuming cannabis does have a medical use, innovation in cannabis varieties may catalyze the development of unimagined pharmaceutical drugs and spur entirely new industries.

Joseph D. Summer, *Patenting Marijuana Strains: Baking up Patent Protection for Growers in the Legal Fog of This Budding Industry*, 23 J. INTELL. PROP. L. 169, 206 (2015) (internal citations omitted).

²¹⁷ See *In re Nelson*, 280 F.2d at 181 (“Refusal to protect them at this stage would inhibit their wide dissemination, together with the knowledge of them which a patent disclosure conveys, which disclosure the potential protection encourages. This would tend to retard rather than promote progress.”).

the protections of patent law simply because the inventions cannot be currently used. Specifically, patent law is not concerned with the use of an invention, but with the progress fostered by the development of new technologies. For example, if marijuana inventions were patentable, inventors would be put on notice of where research and progress in the field stands, allowing inventors to engage in innovation and research that produces better and safer technologies.²¹⁸ Dissemination of information through patents would offer a better understanding of marijuana and could potentially lead to discoveries that warrant legalizing marijuana at the federal level.

However, one could further argue that even if marijuana plants and marijuana-related inventions were patentable, the patents covering such inventions would not be enforceable and therefore useless patents.²¹⁹ This argument is premised on the fact that courts do not enforce illegal rights.²²⁰ First, assuming the patents would not be initially enforceable, this argument further highlights the importance of allowing patent protection for marijuana patents as soon as possible. While the patent might not be initially enforceable, if marijuana laws were to change within the next twenty years, which would be the term of these patents if granted, the patentee would have the ability to sue the infringer once the laws changed. If the patents were not granted and marijuana later becomes legal, the patentee will have altogether lost any right to profit from his invention via the patent system. Second, this argument is only applicable to those cases in which the patentee is also practicing the invention. Since,

²¹⁸ For example, if an inventor discovers that a medication with high levels of CBD, but low levels of THC is useful in treating epilepsy and is granted a patent on such method of treatment, other inventors will know that such application has been discovered. Thus, they would be steered towards researching other applications of the ratio or even other ratios to treat a different illness. But, if the first inventor was not allowed to patent his method, all inventors could potentially be wasting money in researching the same method of treatment while their time could be better spent researching and creating a variety of methods of treatment.

²¹⁹ See Ciccattelli, *supra* note 7 (interviewing Douglas J. Sorocco, the director and shareholder of Dunlap Coddling, who “cannot imagine that a federal patent infringement action on marijuana wouldn’t attract heightened scrutiny to the activities of the alleged infringer as well as the patent holder.”); Forest, *Cannabis IP Remedies: Erie-ly Familiar, Patently Different*, DRUG L. & POL’Y (Apr. 16, 2015), <https://druglawandpolicy.wordpress.com/2015/04/16/cannabis-ip-remedies-erie-ly-familiar-patently-different/> [<https://perma.cc/62TB-VAD6>] (discussing whether marijuana-related intellectual property rights would be enforceable); Milton Springut, *High on IP: Marijuana-Related Intellectual Property Law*, N.Y. L.J. (Jan. 12, 2015), <http://www.newyorklawjournal.com/id=1202714579594/High-on-IP-Marijuana-Related-Intellectual-Property-Law> [<https://perma.cc/D547-2FD8>] (noting it is unclear whether a court would enforce marijuana-related patents).

²²⁰ See Springut, *supra* note 219 (explaining that in both contract and tort law, plaintiffs are unable to pursue legal remedies arising in connection with their own illegal act).

a patent does not grant the patentee the exclusive right to practice the patent, it does not necessarily follow that a patentee that seeks to exclude another from using his invention is himself also using the invention. For example, if a marijuana plant patent holder seeks to exclude another from asexually reproducing his strain, it does not follow that the patentee has been himself reproducing the strain. Thus, patentees seeking to enforce their rights under the patent, and who have not been practicing the patent, should have no issues. Lastly, this is an argument of enforceability that should not bear on the patentability of inventions.

Finally, the Patent Act is silent on morality and illegality, while the Lanham Act, the statute governing trademark law, contains a morality clause.²²¹ Congress passed the Lanham Act in 1946, almost ten years before the Patent Act.²²² If Congress intended to limit the patentability of illegal or immoral subject matter, like it intended to limit the grant of trademarks on scandalous or immoral marks, it would have included a morality or legality clause in the Patent Act. Thus, the absence of a morality or legality clause in the Patent Act further supports the conclusion that illegal subject matter is patentable.

IV. CONCLUSION

As states legalize medical and recreational marijuana and the industry continues to grow, entrepreneurs are becoming increasingly interested in protecting their inventions under patent law. However, patent rights are established under federal law and marijuana remains illegal federally. Consequently, attorneys argue it is unlikely that the USPTO will issue patents protecting marijuana-related inventions. Specifically, courts have never determined whether illegality affects the patentable utility of an invention. In the past, courts invalidated patents if they lacked moral utility under the moral utility doctrine. However, this doctrine is no longer good law. Nonetheless, some of the cases discussing the moral utility doctrine suggest that an invention would be unpatentable if Congress banned the subject matter of the invention. Thus, it appears marijuana strains and some marijuana-related inventions would not be patentable.

²²¹ See 15 U.S.C. § 1052(a) (2012) (“No trademark by which the goods of the applicant may be distinguished from the goods of others shall be refused registration on the principal register on account of its nature unless it – (a) Consists of or comprises immoral, deceptive, or scandalous matter . . .”).

²²² See Lanham Act, CORNELL U. L. SCH. LEGAL INFO. INST. (Oct. 30, 2015), https://www.law.cornell.edu/wex/lanham_act [<https://perma.cc/A4FR-4UZB>] (indicating Congress passed the Lanham Act in 1946 based on the power granted to it by the Commerce Clause of the Constitution).

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Nonetheless, the USPTO should not deny marijuana-related patent applications based solely on the fact that marijuana is illegal under federal law. Accordingly, Ben Holmes's patent application on his Otto II medical-grade marijuana strain should be granted provided it satisfies all the requirements necessary to obtain a plant patent. Specifically, illegality should not play a role in determining whether an invention is patentable or not. Considering legality in a determination of patentability would be inconsistent with the goals of the patent system of promoting disclosure and innovation. Further, there is no detriment to the public from allowing the patentability of illegal inventions because patent rights are negative rights. Last, it is up to Congress to make an explicit determination that illegal subject matter is not patentable; this is not for the USPTO nor the courts to decide. Unless, and until, Congress determines illegality should play a role in determining patentable utility, courts should hold that illegal inventions cannot be denied for lack of patentable utility. Therefore, marijuana-related inventions do not lack patentable utility based on marijuana's illegal status under federal law.

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I would like to thank my family for their ongoing support and unconditional love, without which I would have been unable to discover the success I have been fortunate and blessed to find. A special thanks to my husband for his patient love, constant support, and endless encouragement. I would also like to thank Professor Curt Cichowski: your advice, knowledge, and many insightful discussions and suggestions shaped this Note and made my learning experience at Valparaiso invaluable. To the Editors of Volume 51, thank you for your patience, help, and hard work.