7-1-2023

Street Smarts: The Race to Patent Rights in Athletic Footwear

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STREET SMARST: THE RACE TO PATENT RIGHTS IN ATHLETIC FOOTWEAR

I. TOTALLY LACED IT: INTRODUCING INTELLIGENT FOOTWEAR

As society sprints into the future and companies sweat to keep up with technological advances, athletic brands are turning their focus to intelligent footwear for athletes. Intelligent footwear can improve athlete training and performance by providing biometric feedback to the wearer regarding speed, muscle motion, gait, and location. Intelligent footwear design incorporates mobile app software to provide easily accessible information to the wearer. Athletic brands are patenting intelligent footwear systems hoping to get a head start in the intelligent footwear market. Unfortunately, patents containing broad claims or abstract ideas can result in a monopoly that can hurt a healthy marketplace. An abundance of utility patents for intelligent footwear systems to one or two athletic brands can cause more than a limited monopoly and harm the progress of science and free competition. Design patents, trademarks,


3. For further discussion of intelligent footwear design, see infra notes 99–120 and accompanying text.

4. For further discussion of intelligent footwear patents, see infra notes 99–120 and accompanying text.

5. For further discussion of monopolization, see infra notes 30–44 and accompanying text.

6. For further discussion of monopolization, see infra notes 30–44 and accompanying text.
and even Non-Disclosure Agreements ("NDAs") may be safer sources of protection.  

This Comment will discuss the validity and effects of utility patent protection for intelligent footwear systems and alternative protection options for athletic brands. Section II of this Comment will focus on the United States Patent and Trademark Office’s ("USPTO") patent requirements, patent rights, and the evolution of athletic footwear over the decades. Section III of this Comment analyzes if utility patents for intelligent footwear can cause a monopoly. Section III also discusses whether design patents, trademarks, and NDAs are better for protecting intelligent footwear. Section IV summarizes the Comment.

II. PACING INTO PATENT PROTECTION

Before analyzing the validity of utility patent protection for intelligent footwear, it is important to grasp the fundamental concepts of patent law and the history of athletic footwear. First, this section explains patent rights and the various requirements for patent registration. Second, it discusses patent infringement. Third, this section outlines the evolution of intelligent athletic footwear over the years.

7. For further discussion of alternative options for intellectual property protection, see infra notes 171–189 and accompanying text.
8. For further discussion of validity of patent protection for abstract ideas, see infra notes 30–44 and accompanying text.
9. For further discussion of patent requirements, see infra note 30–61 and accompanying text.
10. For further discussion of abstract ideas, monopolization, and intellectual property protection see infra notes 124–155 and accompanying text.
11. For further discussion of abstract ideas, monopolization, and intellectual property protection see infra notes 124–155 and accompanying text.
12. For further discussion summarizing the article, see infra notes 199–209 and accompanying text.
13. For further discussion of patent law and the history of athletic footwear, see infra notes 17–120 and accompanying text.
14. For further discussion of patent rights, see infra notes 17–72 and accompanying text.
15. For further discussion of patent infringement, see infra notes 73–92 and accompanying text.
16. For further discussion of athletic footwear, see infra notes 93–120 and accompanying text.
A. A Leap into Patent Rights

The USPTO grants patents for inventions that are useful, new, and non-obvious. The public policy behind patent protection is to encourage and incentivize new research, scientific development, and technological growth in the United States. The USPTO aspires to strengthen the United States economy by promoting the industrial and technological progress of the nation by granting patents. Patent rights begin on the issuing date of the patent and last until twenty years after the application’s filing date in the United States. However, patent ownership only provides the right to exclude another’s use of the invention in the United States.


18. See Sung, supra note 17 (explaining USPTO strives to “facilitate innovation through incentivizing inventors to invent and investors to invest in that inventive activity, by providing the reward of temporary exclusivity to the invention in exchange for a public disclosure of the inventive activity.”).

19. See General Information Concerning Patents, supra note 17 (“Through the preservation, classification, and dissemination of patent information, the Office promotes the industrial and technological progress of the nation and strengthens the economy.”); see also Simone A. Rose, Patent “Monopolyphobia”: A Means of Extinguishing the Fountainhead?, 49 CASE W. RES. L. REV. 509, 523 (1999) (stating patent rights stimulate “competitive research and development (R&D) and brings pioneering inventions to fruition.”).

20. See 35 U.S.C. § 154 (a)(2) (2022) (“[S]uch grant shall be for a term beginning on the date on which the patent issues and ending 20 years from the date on which the application for the patent was filed in the United States . . . .”).

include a detailed description, claims, drawings, and examples that describe the invention.\textsuperscript{22} Claims describe the “metes and bounds” of an invention.\textsuperscript{23} Consequently, many patent infringement suits result in claim construction of the meaning of a claim in court to determine the ownership rights of a particular patent.\textsuperscript{24} Design, plant, and utility patents are all available in the United States.\textsuperscript{25} This Comment will further discuss utility and design patents.\textsuperscript{26}

B. Jumping the Hurdle: Patent Requirements for Utility Patents

This section will explain patent requirements established by the USPTO.\textsuperscript{27} Patents must have patent-eligible subject matter that is novel and non-obvious, credible utility, and a proper written description.\textsuperscript{28} The USPTO determines patent eligibility by looking at each patent in light of each requirement.\textsuperscript{29}

1. Subject Matter

There is no categorical rule regarding the patentable subject matter in a utility patent.\textsuperscript{30} However, the USPTO will not grant a patent for any abstract idea, natural law, or physical phenomenon, 

\begin{itemize}
  \item \textsuperscript{22} See MPEP § 1824 (9th ed. Rev. 10, June 2020) (noting claims “shall define the matter for which protection is sought,” be “clear and concise,” and “fully supported by the description”).
  \item \textsuperscript{23} See id. at § 2173.02 (providing claims are used to define “the metes and bounds of the claimed invention”).
  \item \textsuperscript{24} See Phillips v. AWH Corp., 415 F.3d 1303, 1312 (Fed. Cir. 2005) (holding patent claim language describes boundaries of ownership rights being claimed and what rights patentee is entitled to); Merrill v. Yeomans, 94 U.S. 568, 570 (1876) (explaining claims are used to “ascertain precisely” what is patented); see also MPEP § 2173.02 (providing claims can be construed either by USPTO or in court proceedings).
  \item \textsuperscript{25} See General Information Concerning Patents, supra note 17 (stating utility patents are granted to anyone who “invents or discovers any new and useful process, machine, article of manufacture, or composition of matter, or any new and useful improvement thereof”). While design patents are granted “to anyone who invents a new, original, and ornamental design for an article of manufacture.” See id. (explaining requirements for design patents).
  \item \textsuperscript{26} See 35 U.S.C. § 101 (2022) (stating utility patents are granted for invention or discovery of any “new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof”); see also id. at § 171 (“Whoever invents any new, original and ornamental design for an article of manufacture may obtain a [design] patent therefor . . . .”)
  \item \textsuperscript{27} For further discussion of patent requirements, see infra notes 30–61 and accompanying text.
  \item \textsuperscript{28} For further discussion of patent requirements, see infra notes 30–61 and accompanying text.
  \item \textsuperscript{29} For further discussion of patent eligibility, see infra notes 30–61 and accompanying text.
  \item \textsuperscript{30} See Bilski v. Kappos, 561 U.S. 593, 609 (2010) (concluding courts should not adopt categorical rules to determine patentability of business methods because
such as mathematical formulas.\textsuperscript{31} The USPTO may grant a patent for an abstract idea if there is an additional inventive or non-conventional step.\textsuperscript{32} An inventive step ensures the patent owner cannot monopolize an abstract idea.\textsuperscript{33} The patentability of the inventive step relies on if it is well-understood, routine, or conventional apart from the abstract idea.\textsuperscript{34} Courts address patentable subject matter concerns in the “early stage[s] of litigation . . . to screen out weak patents . . . .”\textsuperscript{35} While the subject matter is important it might have “wide-ranging and unforeseen impacts” and business methods are unpatentable because they are abstract ideas).

\textsuperscript{31} See Diamond v. Chakrabarty, 447 U.S. 303, 309 (1980) (holding “laws of nature, physical phenomena, and abstract ideas” are not patentable); Bilski, 561 U.S. at 609 (declaring hedging risk is abstract idea because it is mathematical idea); Gottschalk v. Benson, 409 U.S. 63, 67 (1972) (“[M]ental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.”); see also Elizabeth D. Lauzon, Patentability Under 35 U.S.C.A. § 101 Which Excludes Laws of Nature, Physical Phenomena, and Abstract Ideas, 5 A.L.R. Fed. 3d Art. 4 (2015) (citing KCG Tech., LLC v. CarMax Auto Superstores, Inc., 424 F. Supp. 3d 196, 200–205 (D. Mass. 2019)) (explaining smartphone patent that could project onto car screen was abstract idea). The patent had no improvements in computer technology that created a new device or solved a problem. See id. (explaining improvement did not include any technological advancement or particular method of achieving idea).

\textsuperscript{32} See Alice Corp. Pty. Ltd. v. CLS Bank Int’l, 573 U.S. 208, 225 (2014) (explaining patented invention did not improve any technology or technical field but was only instruction applying abstract idea using generic computer and thus was not patent-eligible); Mayo Collaborative Servs. v. Prometheus Labs., Inc., 566 U.S. 66, 71 (2012) (holding only adding conventional and general steps that are well-known in art is not enough). The exception for abstract ideas prevents the tie-up of “basic tools of scientific and technological work” and the inhibiting of future innovation. See Sally J.T. Necheles, Laws of Nature, Natural Phenomena, and Abstract Ideas as Not Patentable, 20 Mich. Civ. JUR. PATENTS AND INVENTIONS § 12 (April 2023) (explaining courts must distinguish between patents that claim “building blocks of human ingenuity” from patents that “integrate the building blocks into something more” and transfer them into “patent-eligible invention[s]”). But see id. (noting simply adding “token postsolution components does not make the concept patentable”).

\textsuperscript{33} See Alice, 573 U.S. at 221 (quoting Mayo Collaborative Servs. V. Prometheus Labs., Inc., 566 U.S. 66, 72 (2012)) (“A [patent] claim that recites an abstract idea must include “additional features” to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].’”).

\textsuperscript{34} See Chamberlain Grp. v. Techtronic Indus. Co., 935 F.3d 1341, 1349 (Fed. Cir. 2019) (citing Mayo, 566 U.S. at 73) (illustrating inventive ideas are determined by looking at “(1) whether each of [the elements] in the claimed [product] (apart from the natural laws themselves) involve well-understood, routine, conventional activity previously engaged in by researchers in the field, and (2) whether all of the steps ‘as an ordered combination add[] nothing to the laws of nature that is not already present when the steps are considered separately’”); Intell. Ventures I LLC v. Eric Indem., Co., 850 F.3d 1315,1328 (Fed. Cir. 2017) (quoting Mayo, 132 S. Ct. at 1298) (holding when applying inventive concept test courts analyze if there are additional features that are more than “well-understood, routine, [and] conventional activity”).

\textsuperscript{35} See Menell et al., supra note 21, at 300 (explaining issuing patents for business methods or other abstract ideas could harm competition and should not be
tant to patent validity, the USPTO examiner must examine the patent by looking at all the patentability requirements together.36

The USPTO can cause patent monopolies by granting patents for laws of nature, natural phenomena, and abstract ideas.37 Dictionaries define a monopoly as the “exclusive control of the market supply of a product or service.”38 A patent monopoly may negatively affect innovation and the economy, conflicting with the goals of the Patent Act.39 In addition, the Sherman Act makes it a misdemeanor to monopolize any part of trade or commerce in the United States.40 The USPTO aims to encourage invention by rewarding inventors with granted patents and excluding certain ideas from patent protection to promote competition.41 Unfortunately,
patent rights give a patent holder a “limited monopoly” or the power to exclude others from “manufacturing, using, or selling his invention.”\footnote{See Ethyl Gasoline Corp. v. United States, 309 U.S. 436, 448 (1940) (holding “patent law confers on the patentee a limited monopoly, the right or power to exclude all others from manufacturing, using, or selling his invention” and limits of right are defined by claims of patent); Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. 722, 731 (2002) (explaining even though patent act grants temporary monopoly on inventions, invention must be clearly described in “full, clear, concise, and exact terms” to maintain balance between rewarding innovation and promoting progress).} As a result, the USPTO must carefully avoid granting patents for broad and abstract ideas that could result in monopolization.\footnote{See Mayo Collaborative Servs. v. Prometheus Labs., Inc., 566 U.S. 66, 71 (2012) (holding laws of nature, natural phenomena, and abstract ideas are not patentable, and these exceptions exist because monopolizing basic tools of scientific work “might tend to impede innovation more than it would tend to promote it”); see also Stein IP LLC, The Patent Wars, LEXOLOGY (July 24, 2014), https://www.lexology.com/library/detail.aspx?g=46a96fa0-9175-4aa1-9ab4-33557f99bf4b [https://perma.cc/5XCT-7KKC] (explaining patent wars occur when patent owners in competitive fields bring lawsuits repeatedly against competitors and “[a] successful patent lawsuit could give the winner market dominance”).}

2. Utility

In addition to the appropriate subject matter, a patent must also be useful.\footnote{See 35 U.S.C. § 101 (2022) (“Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”); see also MPEP § 2107 (explaining examining guidelines prove that utility must be “specific, substantial and credible”).} The USPTO will only grant a patent for inventions with a specific and substantial benefit to society that a person having ordinary skill in the art (“PHOSITA”) can identify.\footnote{See Brenner v. Manson, 383 U.S. 519, 534–35 (1966) (providing patent rights can create monopoly of knowledge, and patents should only be granted if there is benefit to public through substantial and specific utility that can serve as justification to allow restrictions).} Specific utility means the use cannot be vague and meaningless.\footnote{See In re Fisher, 421 F.3d 1365, 1371 (Fed. Cir. 2005) (explaining applications must have use “which is not so vague as to be meaningless”).} Substantial utility means there is a significant and presently available benefit to the public.\footnote{See Brenner, 383 U.S. at 534–35 (holding that specific benefit must be currently available).}
Enablement, Written Description, and Definiteness

Next, a patent must properly enable, describe, and define the invention.48 First, a properly enabled invention allows a PHOSITA to replicate the invention without undue independent experimentation.49 Undue experimentation occurs when a PHOSITA cannot recreate the patent without numerous independent experiments because the patent is vague.50 Second, the patent description must fully support and define the patent’s claims to prove that the inventor possessed the invention when filing the patent.51 Third, a definite patent claim must inform a PHOSITA with reasonable certainty of the scope of the invention.52

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48. See 35 U.S.C. § 112(a) (2022) (“The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.”).

49. See Incandescent Lamp Patent, 159 U.S. 465, 472 (1895) (holding claim for incandescent conductors for electric lamps is too broad and is attempt to monopolize all fibrous and textile materials for electric lamp conductors); see also In re Wands, 858 F.2d 731, 737 (Fed. Cir. 1988) (explaining factors to consider if PHOSITA would be required to engage in undue experimentation to make and use invention are quantity of experimentation, amount of guidance given, presence of working examples, nature of invention, prior art at time of filing, relative of skill of those in art, and predictability of art and breadth of claim).

50. For further discussion of undue experimentation, see supra note 49 and accompanying text.

51. See Gentry Gallery, Inc. v. Berkline Corp., 134 F.3d 1473, 1479 (Fed. Cir. 1998) (illustrating adequate written description needs more than mere statement that it is part of invention and you must allow PHOSITA to recognize what is being claimed); Regents of Univ. of Cal. v. Eli Lilly & Co., 119 F.3d 1559, 1566 (Fed. Cir. 1997) (holding written description must allow PHOSITA to recognize that inventor invented what is claimed and inventor had possession of claimed subject matter at time of filing date); Ariad Pharms., Inc. v. Eli Lilly & Co., 598 F.3d 1336, 1351 (Fed. Cir. 2010) (explaining “level of detail required to satisfy the written description requirement varies depending on the nature and scope of the claims”).

52. See Nautilus, Inc. v. Biosig Instruments, Inc., 572 U.S. 898, 899 (2014) (concluding absolute precision is not necessary, and definiteness must be evaluated from perspective of PHOSITA); see also Sung, supra note 17 (“Whether a claim is invalid as indefinite depends upon whether those skilled in the art would understand what is claimed when the patent claim is read in light of the remainder of the patent application.”). See generally Gentry, 134 F.3d at 1476 (“The proper construction of claims is based upon the claim language, the written description portion of the specification, the prosecution history, and if necessary to aid the court’s understanding of the patent, extrinsic evidence.”).
4. **Novelty**

In addition, the USPTO will not grant a patent unless the invention is novel. The inventor or a third party cannot have priorly patented, described in a publication, publicly used, or sold the invention before the filing date of the claimed invention. The USPTO looks at prior art to determine whether the invention is novel. Prior art includes any references in public knowledge or publicly available that disclose information relevant to the invention.

5. **Non-Obvious**

Lastly, a PHOSITA must find the patentable invention non-obvious before the filing date. The USPTO determines obviousness by looking at the scope and content of the prior art, differences between the prior art and the claims at issue, and the level of ordinary skill in the pertinent art. The USPTO only looks at analogous prior art from the same field as the invention or prior art relevant to the particular problem. The USPTO determines the

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54. See 35 U.S.C. § 102(a)(1) (2022) (“[P]erson shall be entitled to a patent unless — (1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention . . . .”); 35 U.S.C. § 102(b)(1) (showing exceptions to prior art such as disclosures made one year or less before effective filing date by inventor or another who obtained information directly from inventor); see also In re Klopfenstein, 380 F.3d 1345, 1348–49 (Fed. Cir. 2004) (holding printed publication means reference was sufficiently accessible to interested public); see also Egbert v. Lippmann, 104 U.S. 333, 339 (1881) (explaining use by friend of family can count as public use when you give up control of something); see also In re Robertson, 169 F.3d 743, 745 (Fed. Cir. 1999) (noting anticipation occurs if every claim element in patent is described in single prior art).

55. See MPEP § 901 (listing types of different references that can be considered prior art).

56. See id. (defining prior art).

57. See 35 U.S.C. § 103 (2022) (stating patent may not be obtained if “the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains”).


59. See In re Clay, 966 F.2d 656, 658–59 (Fed. Cir. 1992) (concluding relevant prior art is determined by looking at field and particular problem being addressed); see also MPEP § 2141.03 (providing types of obviousness include combining prior art elements according to known methods to yield predictable results, use of known techniques to
level of ordinary skill in the art by examining each of the following: (1) types of problems in the art, (2) prior solutions to those problems, (3) the speed of innovation, (4) the sophistication of the technology, and (5) the education level of active workers in the field. Inventions with unexpected results are also considered non-obvious.

C. Running into Requirements for a Design Patent

Design patents are given for “any new, original and ornamental design for an article of manufacture.” While both a design and utility patent can be granted for the same invention, design patents only protect how the invention looks. The design must be definite, preconceived, capable of reproduction, and cannot exist alone, separate from the article of manufacture. The term for a design patent is a fixed term of fifteen years compared to the twenty-year term for a utility patent. Moreover, design patents improve similar devices in the same way, obvious to try, and some teaching that would have led PHOSITA to combine prior art references).

60. See In re GPAC Inc., 57 F.3d 1573, 1579 (Fed. Cir. 1995) (explaining courts will consider various factors to determine skill level of PHOSITA); see also MPEP § 2141.03 (listing various factors required).

61. See United States v. Adams, 383 U.S. 39, 50–52 (1966) (explaining electric battery using water was non-obvious). An invention that is obvious to try can be non-obvious when the prior art gives no indication of which parameters to use and if there are many choices or when it is obvious to try and explore new technology in a promising field, but the prior art only gave general guidance. See In re Kubin, 561 F.3d 1351, 1361 (Fed. Cir. 2009) (holding patents are non-obvious if they succeed where no one else has and there is no reasonable expectation of success).

62. See 35 U.S.C. § 171 (2022) (stating “whoever invents any new, original and ornamental design for an article of manufacture may obtain a patent”); see also MPEP § 1502 (explaining design patent applications claim only designs in or applied to article of manufactures, not actual articles). Ornamental designs include all surface ornamentation and the configuration of goods, visual characteristics, or the combination of configuration and surface ornamentation. See MPEP § 1502 (explaining “design is inseparable from the article to which it is applied” and must be reproducible).

63. See MPEP § 1502.01 (“Both design and utility patents may be obtained on an article if invention resides both in its utility and ornamental appearance.”); see also Menell et al., supra note 21, at 459 (“A design may consist of surface ornamentation, configuration, or a combination of both.”).

64. For further discussion of patentable designs, see supra notes 61–62 and accompanying text.

65. See MPEP § 1502.01 (explaining term of United States design patent lasts fifteen years and is measured from date of granting design patent, while utility patents last twenty years from earliest filing date in US). Design patents have a fixed fifteen-year term, and no maintenance fees are required throughout the term to keep the patent alive, unlike utility patents, which require multiple maintenance fees. See 35 U.S.C. § 173 (2022) (explaining patents filed on or after May 13, 2015, have fifteen-year grants while applications before May 13, 2015, only have fourteen-year term for design patent term).
only have one claim. Design patents require ornamentality, novelty, and non-obviousness to qualify. While the USPTO grants design patents for functional articles, the ornamental design must be utilized mainly for aesthetic pleasure. The design of an article of manufacture is considered functional if the design is “dictated by the use or purpose of the article” and no other design can achieve the same function. Similar to utility patents, design patents must also be novel and non-obvious. Novelty in a design patent is determined by comparing prior art and whether an ordinary observer would consider the design novel from the existing prior art. Non-obviousness is evaluated by looking at references that are similar in appearance or would suggest the application of certain features in a similar product.

66. See MPEP § 1502.01 (explaining design patents, unlike utility patents, only have one claim); MPEP § 1503.01 (stating “the claim shall be in formal terms to the ornamental design for the article” and more than one claim is not permitted); see also U.S. Patent No. US D848,136 S (issued May 14, 2019) (claiming “the ornamental design for a shoe, as shown and described” for design patent for Nike shoe).

67. See Menell et al., supra note 21, at 460 (illustrating design patent requires novelty, originality, and non-obviousness, and design must be ornamental and not reliant on functional considerations).

68. See MPEP § 1504.01 (mentioning ornamental feature or design in patent must be more than simply result of functional considerations); see also Blisscraft of Hollywood v. United Plastics Co., 294 F.2d 694, 696 (2d Cir. 1961) (explaining ornamental means “product of aesthetic skill and artistic conception” and holding that pitcher with no aesthetic appeal or motif in its design, line, form, or color was not ornamental).

69. See Menell et al., supra note 21, at 463 (explaining even if there is artistically pleasing appearance, it cannot be given design patent protection if dictated by function of article); see also L.A. Gear, Inc. v. Thom McAn Shoe Co., 988 F.2d 1117, 1121–24 (Fed. Cir. 1993) (explaining plaintiff designed women’s athletic shoes, obtained design patent on shoes, and argued defendant had infringed their patents). The defendant argued that the design patent was invalid because it was functional, reasoning that if a design is essential to the use of an article, it is functional and cannot be granted a design patent. See L.A. Gear, 988 F.2d at 1121–24 (holding to determine if design is functional or ornamental design must be viewed as whole). If there are multiple ways to achieve the same function of the article of manufacture, the design is more likely to be ornamental. See id. (holding patent was not invalid and was primarily ornamental).

70. See MPEP § 1504 (noting design patent requirements); see also Menell et al., supra note 21, at 460 (explaining that design patents must meet novelty, originality, and non-obviousness).

71. See MPEP § 1504.02 (explaining conditions for patentability for novelty from 35 U.S.C. § 102 apply to design patents); MPEP § 1504.03 (explaining Graham test applies to evaluating obviousness of design patents).

72. See Blisscraft of Hollywood, 294 F.2d at 696 (concluding pitcher design with combination of well-known elements was unoriginal combination and pitcher was not original in comparison to existing prior art in field of pitchers); see also MPEP § 1504.03 (explaining design must be obvious to designer with ordinary skill in art for type of article it is applied to considering prior art).
D. All Tied Up: Patent Infringement

1. Literal Infringement

Anyone who makes, uses, offers, or sells any patented invention without authority infringes a patent. An infringer can infringe on a utility patent through literal or indirect infringement. For literal infringement, the infringing product must have every element of the patented claims or must fall within the doctrine of equivalents. The doctrine of equivalents provides that if there is substantially the same function in substantially the same way that will achieve substantially the same result, there is infringement even if every element is not disclosed. Prosecution history estoppel prevents a patent owner from claiming the doctrine of equivalents for any subject matter lost when narrowing a claim during patent prosecution. However, any cosmetic amendments and changes to a claim that are unrelated to the patentability of a claim are not barred.

2. Indirect Infringement

Indirect infringement of a utility patent can occur through either active inducement or contributory infringement.
ducement of patent infringement requires knowledge of the patent and the direct acts that are infringing the patent. 80 Direct acts of infringement include making, selling, offering to sell, or using a patented invention without permission. 81 However, willful blindness satisfies the knowledge required when evaluating infringement claims. 82 Contributory infringement, or selling or offering to sell patented material, also requires knowledge of the patent and that the contributing activity is infringement. 83 In addition, the infringing product cannot have a substantial non-infringing use for contributory infringement. 84 Patent infringement in a design patent occurs when the patented design is manufactured or sold without the patent holder’s permission. 85 USPTO examiners must evaluate design patent infringement from the view of an ordinary observer to determine if the design viewed in its entirety is so similar that it is considered infringing. 86

3. Defenses and Damages

Patent infringement defenses include an argument that the patent is invalid, inequitable conduct made the patent unenforceable, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer.

80. See Glob.-Tech Appliances, Inc. v. SEB S.A., 563 U.S. 754, 765–66 (2011) (holding 35 U.S.C. § 271(b) and (c) both require knowledge of existence of patent even though it is not explicitly stated in statute).

81. See 35 U.S.C. § 271(a) (2022) (“Whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent.”).

82. See Glob.-Tech Appliances, Inc, 563 U.S. at 768 (holding willful blindness is widely accepted, used in many criminal statutes, and applies in civil lawsuits under 35 U.S.C. § 271(b) for patent infringement under inducement).

83. For further discussion of contributory infringement, see supra notes 77–79 and accompanying text.

84. See Aro Mfg. Co. v. Convertible Top Replacement Co., 377 U.S. 476, 486 (1964) (finding replacement parts specifically made and designed to repair convertible tops had no other use other than to repair specific convertible tops).

85. See 35 U.S.C. § 289 (2022) (“Whoever during the term of a patent for a design, without license of the owner, (1) applies the patented design, or any colorable imitation thereof, to any article of manufacture for the purpose of sale, or (2) sells or exposes for sale any article of manufacture to which such design or colorable imitation has been applied . . . . ”).

86. See L.A. Gear, Inc. v. Thom McAn Shoe Co., 988 F.2d 1117, 1125–26 (Fed. Cir. 1993) (concluding design patent infringement only relies on patented designs and any confusing similarity found by ordinary observer and “requires a showing that the accused design is substantially the same as the claimed design”).
able, or there was no infringement in the first place. The remedies for patent infringement suits include damages and injunctions. Damages consist of both reasonable royalties and lost profits. The court awards lost profits for a foreseeable result of damages from actual infringement, using the “but for” test to determine if “but for” the infringement, the patent owner would not have lost the competition. The court calculates reasonable royalties using the price that the patent owner could have negotiated in an agreement for the invention at the time of infringement. In addition, the patent owner can use permanent injunctions to stop the infringer from continuing use of the infringing product.

87. See 35 U.S.C. § 282(b) (2022) (stating defenses to patent infringement include no infringement or invalidity of patent or any claim in suit); see also Therasense, Inc. v. Becton, Dickinson & Co., 649 F.3d 1276, 1285 (Fed. Cir. 2011) (explaining inequitable conduct or doctrine of unclean hands is defense to patent infringement). See generally Purdue Pharma L.P. v. Endo Pharm., Inc., 410 F. 3d 690, 695 (Fed. Cir. 2005) (“Inequitable conduct, which can arise from an affirmative misrepresentation of a material fact, failure to disclose material information, or submission of false material information, coupled with an intent to deceive or mislead the PTO.”).

88. See Menell et al., supra note 21, at 434–50 (outlining different remedies available for patent infringement); see also John D. Luken & Lauren Ingebritson, Remedies in Intellectual Property Cases: Recent Trends in Reasonable Royalty Damages in Patent Cases, DINSMORE, https://www.dinsmore.com/content/uploads/2018/11/2018_02_Remedies_01_Patents_A_Royalty_Damages.pdf [https://perma.cc/W9Y9-QXPR] (last visited Mar. 9, 2023) (explaining that while injunctions, lost profits, and reasonable royalty damages are all available as remedies, reasonable royalty damages are most common).

89. See Menell et al., supra note 21, at 434–50 (explaining multiple types of damages can be granted from patent infringement suits); see also Brian Farkas, What Types of Damages Will Court Award for Patent Infringement?, NOLo, https://www.nolo.com/legal-encyclopedia/what-types-of-damages-or-compensation-will-court-award-for-patent-infringement.html [https://perma.cc/NHV5-VUY3] (last visited Mar. 9, 2023) (defining reasonably royalties as “fair market value of a license” that patent owner could have earned on their patent and defining lost profits as “the monies that you or your company could have made but for the defendant’s wrongful infringement of your patent.”).

90. See Panduit Corp. v. Stahlin Bros. Fibre Works, 575 F.2d 1152, 1158 (6th Cir. 1978) (determining there is four-factor test to prove lost profits on sales (1) you must prove demand for patented product, (2) absence of acceptable non-infringing substitutes, (3) manufacturing and marketing capability to meet demand, and (4) amount of profit that would have been made).

91. See Georgia-Pac. Corp. v. U.S. Plywood Corp., 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970) (finding factors used to determine reasonable royalties include rates paid by licensee in comparable patent, nature and scope of license, licensees tendency to license out patent, duration of patent, established profitability of product, and commercial success of product).

92. See eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, 391 (2006) (providing permanent injunctions for patents are granted after four factor analysis including (1) plaintiff must show irreparable injury, (2) remedies available at law are inadequate to compensate for injury, (3) remedy is warranted after considering
E. The “Sole” of Athletic Footwear

Specialized footwear that enhances body function during exercise and athletic events is a competitive market for research and development. Older utility patents for athletic footwear include advancements such as segmented soles, cleated footwear, shock-absorbing devices, and advanced cushioning systems. Additional athletic footwear inventions patented by athletic brands include collapsible shoes stored in vending machines, breathable knitted sneakers, and individual toe slot footwear. Patent infringement cases in athletic footwear mainly include claim construction suits where the parties dispute the meaning of certain claim terms to determine infringement and the validity of patents. Infringement lawsuits occurred because many athletic footwear patents utilize similar concepts, such as advanced cushioning systems, inflated


93. For further discussion of specialized footwear, see infra notes 94–95 and accompanying text.


96. See Cushion Techs., LLC v. Adidas Salomon N. Am., Inc., 537 F. Supp. 2d 839, 842 (E.D. Tex. 2008) (illustrating plaintiff argued defendant infringed various claims of their patents because inventions shared common subject matter related to methods and articles for cushioning footwear). The invention is for footwear designed to absorb forces caused by the wearer during sporting activities. See id. (explaining court constructed various parts of claims to determine if there was patent infringement regarding cushioning footwear designed to absorb forces); see also Akeva L.L.C. v. Adidas-Salomon AG, 208 F. App’x 861, 862–66 (Fed. Cir. 2006) (explaining plaintiff is company with multiple footwear patents suing Adidas for infringement of two claims describing improvements to athletic shoe heels). The specification described a “‘flexible member’ improvement that can be incorporated in rear soles that are detachable, or rotatable, or permanently secured.” See id. (explaining Adidas shoes only have permanently fixed rear soles that do not rotate, and parties were arguing meaning of the term “secured” in claim language).
bladders, and specialized shoe heels. Athletic footwear companies focus their research and development on enhancing their athletic footwear performance and being competitive in the market.

F. Sprinting in Smart Shoes

Intelligent footwear is the newest technological advancement in athletic footwear. Individuals can wear intelligent sneakers for gait analysis, improved comfort, support, distance tracking, weight distribution analysis, and data collection regarding the surrounding environment. In addition, the shoes can track activity levels to measure daily fitness and calorie deficit. Pressure sensors in intelligent footwear allow for personalized feedback to analyze fatigue, health, steps, calories, posture, and create precise data. They are commonly available in a wide variety of colors, sizes, and designs that can also be personalized with illustrations. As compared to standard shoes, smart shoes consist of inertial-magnetic measurement units used for gait analysis and have pressure sensors used to provide information on the distribution of body weight and monitor performance.

97. For further discussion of patent infringement cases, see supra note 95 and accompanying text.


intelligent shoes can make self-tightening and self-lacing shoes.\textsuperscript{102} Moreover, smart shoes can connect to smartphones via Bluetooth to give users easy access to collected data.\textsuperscript{103}

Adidas, the first athletic brand to venture into intelligent footwear and data tracking, wields their patents against competitors.\textsuperscript{104} Adidas has multiple patents describing intelligent systems for articles of footwear that can automatically adjust in response to measured performance characteristics.\textsuperscript{105} Adidas led the race to market with intelligent footwear by introducing the first smart shoe on their website in 2004.\textsuperscript{106} The Adidas shoe provides intelligent cushioning that automatically and continuously adjusts using sensors and a magnet inside the shoe.\textsuperscript{107} The intelligent system allows the cushioning to adjust, providing the most support throughout a run or other activity.\textsuperscript{108} Adidas advertises itself as a clear leader in the field of intelligent footwear.\textsuperscript{109} More recently, Adidas announced a new intelligent shoe system that detects soccer-specific move-

\textsuperscript{102}. See id. (demonstrating shoes with pressure sensors can detect feet and self-lace the shoe).

\textsuperscript{103}. See Global Smart Shoes Market (2022 to 2027) - Industry Trends, Share, Size, Growth, Opportunity and Forecasts, supra note 99 (stating smart shoes are “digitally connected to smartphone applications and are embedded with monitoring navigation and positioning, electronic systems, microchips, pressure sensors, and a battery”).


\textsuperscript{107}. See id. (explaining how Adidas shoes function).

\textsuperscript{108}. See id. (explaining how cushioning in Adidas shoes adjust).

\textsuperscript{109}. See id. (claiming “in the last four years, adidas has launched more product innovations than any other sports brand”); see also Poritz, supra note 104 (stating complaint filed by Adidas states Adidas was “first in the industry to comprehensively bring data analytics to athletes”).

Examples of other recent intelligent footwear patents include footwear with interchangeable sensors, dance shoes with sensors for training, and automatic adjusting or lacing shoes.\footnote{See id. (explaining mechanics behind software tag).} Some of the most well-known smart shoes in 2022 include Nike HyperAdapt 1.0 and Under Armour UA HOVR Sonic.\footnote{See HyperAdapt 1.0 Step Into The Future, Nike, https://www.nike.com/launch/t/hyperadapt-1-0 [https://perma.cc/LD4R-SUBT] (last visited Feb. 7, 2023) (illustrating new smart shoes available on market).} Nike is catching up with Adidas with its own electronic lacing system able to adjust to the shape of the user’s foot and connect to the Nike app on smartphones.\footnote{See id. (explaining other features of Nike’s smart shoe).} The Nike app also provides the ability to personalize the color of lights on the shoes.\footnote{See id. (providing shoe has embedded sensor in sole of shoe that connects via Bluetooth to smartphone app and “can track, analyze, and store detailed running metrics to inform ways to improve performance”).} Under Armour is also active in the intelligent footwear market with a smart sneaker that tracks and analyzes data from the user’s run and provides feedback to the user on a smartphone app.\footnote{See UA HOVR SONIC 2.1, UNDER ARMOUR (Nov. 6, 2018), https://about.underarmour.com/news/2018/11/2019-ua-hovr-sonic-2 [https://perma.cc/B5VC-5EL3] (showcasing Under Armour’s smart shoe in today’s market).} The sneaker contains an embedded sensor that transfers running metrics to the online app.\footnote{See id. (providing shoe has embedded sensor in sole of shoe that connects via Bluetooth to smartphone app and “can track, analyze, and store detailed running metrics to inform ways to improve performance”).}

Lastly, Puma has joined the smart shoe race with a self-lacing training shoe for workouts and light running.\footnote{See Computer Meets Foot Fit Intelligence, PUMA, https://about.puma.com/en/innovation/fit-intelligence [https://perma.cc/TL8T-5PZV] (last visited Feb. 7, 2023) (introducing Puma’s smart shoe technology that is smart and self-lacing).} The sneaker has a mechanical system to lace the shoes and can connect to a...
smartphone app. Puma has also researched with the MIT Design Lab on bio-designed sneakers called “breathing shoes” that can adapt to a user’s heat patterns and open slits for ventilation.119

III. DOES THE SHOE FIT? SHOULD INTELLIGENT FOOTWEAR BE PATENTABLE?

Athletic companies are scrambling to patent new intelligent footwear designs as technology advances.121 Unfortunately, utility patents for intelligent footwear may include abstract, overbroad, and obvious concepts that may threaten the monopolization of the intelligent footwear market.122 Fortunately, athletic companies have alternative means available for intellectual property protection.123

A. Tripping Over Loose Laces: Patentability Issues with Intelligent Footwear

Purely abstract ideas cannot be patented without adding an inventive step to prevent patent monopolization, however, there is no categorical rule to determine abstraction.124 In the intelligent footwear market, using sensors and other basic software to populate workout and training metrics may constitute an unpatentable abstract idea.125 For example, the 960’ Adidas patent which describes a variety of well-known sensor technology, could be viewed as using

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119. See id. (demonstrating mechanics of Puma’s intelligent footwear system which uses a micrometer and a cable system).

120. See Thomas Catenacci, These New Shoes Designed by Puma and MIT Lab Can Tell How You’re Feeling, CNBC (June 7, 2018, 6:45 AM), https://www.cnbc.com/2018/06/05/puma-mit-shoes-can-breathe.html [https://perma.cc/S2R4-CVPA] (writing about collaboration between PUMA and MIT to research living breathable shoes); see also Jennifer Chu, Researchers Design Moisture-Responsive Workout Suit, MIT NEWS OFFICE (May 19, 2017), https://news.mit.edu/2017/moisture-responsive-workout-suit-0519 [https://perma.cc/UX2Q-223C] (explaining MIT developed moisture responsive workout suit with ventilating flaps that open and close in response to athlete’s sweat and MIT also used same fabric to create prototype of running shoe with similar flaps).

121. For further discussion of new intelligent footwear patents, see supra notes 99–120 and accompanying text.

122. For further discussion of patentability issues in intelligent footwear, see infra notes 124–155 and accompanying text.

123. For further discussion of alternative options of protection, see infra notes 171–195 and accompanying text.

124. See MPEP § 2106.04(a) (“[E]numerated groupings of abstract ideas are defined as: 1) Mathematical concepts . . . 2) Certain methods of organizing human activity . . . and 3) Mental processes . . . .”).

125. For further discussion of abstract ideas, see supra note 124 and accompanying text.
an abstract idea or natural law.\textsuperscript{126} In addition, other common aspects of intelligent footwear systems, such as standard app and monitoring software, may also act as an abstract idea.\textsuperscript{127} Computer software and calculation methods have been borderline abstract ideas that courts have debated for many years.\textsuperscript{128} Intelligent footwear can analyze athlete biometrics using existing sensors inside shoes to provide feedback and adapt the shoe to better work for the wearer.\textsuperscript{129} This is an abstract idea of using data gathering.\textsuperscript{130} Simply placing such software inside a shoe may not be enough of an inventive step.\textsuperscript{131} Even if embedding these sensors and software inside athletic footwear can be considered an inventive step, patents must still be analyzed in light of the remaining requirements for patentability.\textsuperscript{132}

A PHOSITA may find combining commonplace sensors and Bluetooth software inside a wearable shoe obvious.\textsuperscript{133} Utilizing wearable footwear sensors to measure athletes’ biometrics is commonplace when wearable sensors are well-established and used in many ways.\textsuperscript{134} Programs to analyze the training metrics of athletics

\textsuperscript{126} See U.S. Patent No. US 7,676,960 B2 (issued Mar. 16, 2010) (claiming "intelligent footwear system" for Adidas with "pressure sensor, a force transducer, a hall effect sensor, a strain gauge, a piezoelectric element, a load cell, a proximity sensor, an optical sensor, an accelerometer, a hall element or sensor, a capacitance sensor, an inductance sensor, an ultrasonic transducer . . . ").

\textsuperscript{127} For further discussion of abstract software patents, see supra note 31 and accompanying text.

\textsuperscript{128} For further discussion of abstract ideas, see supra note 31 and accompanying text.


\textsuperscript{131} But see Fitbit, Inc. v. AliphCom, 233 F. Supp. 3d 799, 806 (N.D. Cal. 2017) (explaining wearable fitness tracking device that can connect to smartphone is not abstract but acknowledging that “not all claims relating to computer technologies are not abstract,” especially if focus is on “‘certain independently abstract ideas that use computers as tools’ instead of ‘an improvement in computers as tools’”).

\textsuperscript{132} See MPEP § 2106 (stating patents must be examined using all requirements).

\textsuperscript{133} See KSR Int’l Co. v. Teleflex Inc., 550 U.S. 398, 419 (2007) (explaining patents combining previously known elements can be considered obvious).

\textsuperscript{134} See Case: Patents/Obviousness (P.T.A.B.), BLOOMBERG LAW (June 2, 2022, 2:46 PM), https://www.bloomberglaw.com/product/blaw/bloomberglawnews/bloomberg-law-news/XFGCCII4000000?bc=W1siU2VhcmNoIjoiTm8gX19qNjvd3Nllj
and their body movements for improvement have existed for a long time.\textsuperscript{135} In addition, research and development for athletic footwear before intelligent footwear focused on improving shoes to be better suited for certain movements and body structures.\textsuperscript{136} A PHOSITA would find a combination of sensors, software, and wearable items to be an obvious next step in advancing athletic footwear.\textsuperscript{137}

Moreover, even if intelligent footwear systems are non-obvious, the patented claims may be overbroad and lead to a patent monopoly.\textsuperscript{138} For example, the Adidas 960\textsuperscript{\textregistered} patent is very broad enabling Adidas to bring multiple infringement suits against competing athletic brands.\textsuperscript{139} The Adidas 960\textsuperscript{\textregistered} patent is a working example of an overbroad patent containing an abstract idea that could cause a limited monopoly in the smart footwear industry.\textsuperscript{140} The 960\textsuperscript{\textregistered} patent broadly claims a system for monitoring performance characteristics such as velocity, acceleration, jerk, distance, and stride of the

\textsuperscript{135.} See Eskofier et al., supra note 129 (explaining uses of smart shoes for health).

\textsuperscript{136.} For further discussion of developments in athletic footwear, see supra notes 95–120 and accompanying text.

\textsuperscript{137.} For further discussion of obvious patents, see supra notes 58–61 and accompanying text.

\textsuperscript{138.} See Incandescent Lamp Patent, 159 U.S. 465, 472 (1895) (holding broad claim was attempting to monopolize all fibrous and textile materials for illumination); O'Reilly v. Morse, 56 U.S. 62, 129 (1853) (holding patent claim for all applications of electro-magnetism for printing signs, letters, and characters at distance as overbroad).

\textsuperscript{139.} For further discussion of Adidas's infringement suits, see infra note 156 and accompanying text.

\textsuperscript{140.} See 35 U.S.C. § 271(c) (2022) ("Whoever offers to sell or sells within the United States or imports into the United States a component of a patented machine, manufacture, combination or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer.").
wearer and transmitting the signals. This claim can be viewed as extremely overbroad, creating a monopoly on any type of intelligent footwear that utilizes a sensor to analyze the wearer’s body movement. Adidas is not alone in broadly patenting intelligent footwear systems; Nike’s patent for its automatic lacing system may also allow Nike to bring unnecessary infringement suits against competitors.

A monopoly in athletic footwear may lead to a stalemate of innovation in an era where smart footwear is the next leading asset for athletes to analyze their fitness and development. Biometrics are an important aspect of modern athletic training. Athletes use biometrics in their training for various purposes in many sports. For example, runners can map their gait, speed, impact of their feet, and environmental factors during their runs. In addition, soccer players can gain valuable information regarding

141. See U.S. Patent No. US 7,676,960 B2 (issued Mar. 16, 2010) (claiming intelligent footwear system for Adidas that measures “the length of the stance phase to determine other performance characteristics of the shoe, for example velocity, acceleration, and jerk”).

142. See Morse, 56 U.S. at 129 (finding claims are too broad if inventor does not confine to type of machinery and claim essence of invention).

143. See File Adapt, supra note 114 (explaining Nike Adapt App allows user to “tighten, loosen and fine-tune the fit of each shoe”).


146. See Arnold, supra note 145 (providing wearable devices have many applications and “the wearable technology industry is still in its infancy and future applications of these monitoring devices are broad”).

147. See Eskofier et al., supra note 129 (demonstrating uses of smart shoes to measure effects on body during walking and running).
their kicks. A monopoly in intelligent footwear systems would have detrimental effects on athletics. Furthermore, as technology advances and smart footwear becomes the next big thing, brands will burden courts with many infringement suits regarding intelligent footwear systems.

While the USPTO grants a limited monopoly by giving patent rights to incentivize innovation by rewarding inventors, the overall goal of the USPTO is to promote the progress of science. Patents for broad and abstract ideas may lead to an impasse in the development of large areas of technological advancement in the present day. The USPTO acknowledges such hazards and has even set limitations on patent rights, such as prosecution estoppel and unpatentable subject matter, to prevent the excessive monopolization of broad ideas. Granting broad utility patents for intelligent footwear systems could lead to a situation where courts are burdened with many infringement suits regarding such systems.
gent footwear systems violates the patent system even if patent protection incentivizes certain inventors to continue research and development.155

B. Beyond the Shoe: It All Matters

Adidas also owns patents for mobile app software that can connect to wearable devices to track and display exercise statistics during workouts.156 Adidas has repeatedly claimed that wearable workout trackers in correlation with their “supporting software” for the mobile apps are infringing their patents.157 In addition to footwear, Adidas filed infringement suits against multiple types of software and wearables that track exercise and activity analytics.158 The monopoly caused by patents for such broad ideas goes well beyond footwear and affects the entire industry of biometric analysis available to athletes.159 The software apps Adidas claims to have power over are used in correlation with items such as smart clothing, watches, and bands, many of which are already mainstream today.160

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155. For further discussion of abstract ideas, see supra notes 124–155 and accompanying text.

156. See Gullo, supra note 104 (explaining Adidas sued Under Armour claiming its exercise tracking and fitness monitoring products infringed Adidas’s patents on mobile application technology that can track heart rate, calories burned, and other workout metrics); see also Poritz, supra note 104 (mentioning Adidas sued Nike claiming Nike Inc. mobile apps including Nike Run Club infringed Adidas’s patents for tracking systems, remote control athletic wear, and mobile fitness features).

157. See Gullo, supra note 104 (listing Under Armour’s infringing products such as “chest straps, watches and supporting software and mobile applications, and the mobile products marketed by the company’s MapMyFitness unit”).

158. For further discussion of infringement suits, see supra note 156 and accompanying text.


C. Cutting to the Chase: Back to Patent Infringement

On the bright side, utility patents only last twenty years, and many Adidas patents have expiration dates within the next five years. However, if Adidas is allowed to keep creating new patents on broad subject matter similar to the intelligent footwear systems, their monopoly could last a lot longer than could ever be useful. If intelligent footwear and tracking devices become the new norm, Adidas’s patent power will disturb competition in the market. In addition to Adidas, other brands with broad patents can also chase after competitors, bringing cumbersome infringement suits. As more athletic and fitness brands venture into the field of intelligent athletic footwear and other wearable devices, they will face the burden of working around the existing patents. These damages can amount to large sums of money that create a deterrent for competing companies to steer clear of the intelligent footwear market.

104 (detailing that Under Armour has products such as chest straps and watches supporting mobile application software).

161. See 35 U.S.C. § 154(a)(2) (2022) (explaining patents have twenty-year term from date patent is filed).

162. For further discussion of market disruption, see supra notes 159–160 and accompanying text.

163. See Fitbits of the Future: What’s Next for Biometric Data in Health?, supra note 159 (providing global wearable devices market is expected to nearly double by 2021, and emerging smart clothing is expected to increase).


165. For further discussion of market growth in intelligent footwear, see supra note 160 and accompanying text.

166. For further discussion of patent infringement and damages, see supra notes 73–92 and accompanying text.

D. No Small “Feet”: Acquiring Other Avenues of Protection

Athletic companies still require intellectual property protection for their products. Multiple alternative routes include design patents, trademark protection, and even NDAs. While utility patents may not be the best choice, athletic companies still have options for protection.

1. Design Patents

As an alternative to utility patent protection, design patents may be the best avenue of patent protection for intelligent athletic footwear. Design patents would not cause a monopoly as items can be designed in many ways while still employing the same abstract idea. Athletic sports companies already have many design patents for their products. The concept of intelligent athletic footwear is a broad idea that may not be suitable for a utility patent. However, athletic brands put a lot of thought into their products’ design and aesthetic appeal. Brands aim to have eye-catching products to differentiate themselves from competitors and attract consumers.


169. For further discussion of alternative options of protection, see infra notes 171–193 and accompanying text.

170. For further discussion of utility patents, see infra notes 27–61 and accompanying text.

171. For further discussion of design patents, see supra notes 62–72 and accompanying text.


174. For further discussion of design patents, see infra notes 62–72 and accompanying text.

catching and appealing designs that keep up with the latest fashion trends for their athletic footwear that remain separate from the functionality of the shoe.\textsuperscript{176} As a result, athletic shoe brands can file design patents for their footwear lines.\textsuperscript{177}

Intelligent footwear may be commonplace in the future, but shoe designs will keep evolving and changing to suit the changing trends in fashion.\textsuperscript{178} Design patents can effectively allow companies to keep their competitive edge in the marketplace without creating a monopoly on a single abstract idea.\textsuperscript{179} Multiple companies can have intelligent footwear shoes but they can have varying designs.\textsuperscript{180} Design patents are also useful when trademark and copyright protection cannot protect a highly functional item like a shoe. Design patents can protect “the visual characteristics” of a shoe, such as the shape or any surface decorations.\textsuperscript{182}

2. Trademarks

However, trademark protection is still available for footwear even though it may be harder to prove trademarkable footwear has no functionality.\textsuperscript{183} Product features required for a good’s function

\begin{itemize}
\item 176. For further discussion of advertising, see supra note 175 and accompanying text.
\item 177. For further discussion of design patents, see supra notes 62–72 and accompanying text.
\item 178. For further discussion of market trends, see supra note 160 and accompanying text.
\item 179. See Jonathan Hyman, Charlene Azema, & Loni Morrow, If the IP Fits, Wear It: IP Protection for Footwear—A U.S. Perspective, 108 TRADEMARK REP. 645, 703 (2018) (noting design patents only protect designs substantially similar to patented design not idea behind design); see also Design Patent Application Guide, USPTO (Sept. 19, 2022), https://www.uspto.gov/patents/basics/types-patent-applications/design-patent-application-guide [https://perma.cc/6FX9-CA64] (concluding patentable designs must be original and cannot be well-known or naturally occurring).
\item 180. For further discussion of existing design patents, see supra note 173 and accompanying text.
\item 181. See Hyman et al., supra note 179, at 702 (explaining design patents can protect shoe shapes without requiring secondary meaning or acquired distinctiveness). Design patents are beneficial because they can provide protection when copyright and trade dress protection is unavailable. See id. at 709 (discussing design patents for footwear).
\item 182. See MPEP § 1502.01 (explaining design patents protect appearance of articles, including shape, configuration, and surface ornamentation applied to articles).
\item 183. See What Is a Trademark, USPTO (Feb. 6, 2023, 12:40 PM), https://www.uspto.gov/trademarks/basics/what-trademark [https://perma.cc/SXK9-3CXH] (explaining trademarks can identify source of good or service, provide legal protection for brand, and guard against counterfeiting and fraud). A trademark can be any word, phrase, symbol, design, or combination of the above that identifies a good or service. See id. (defining trademarks); see also Lanham Act, 15
and use are not trademarkable. Yet, trademark protection is possible if shoes have a distinct look, symbolism, or color. The USPTO also grants trademark protection for product packaging and displays serving as source identifiers. Moreover, the software apps used by athletic brands in collaboration with the intelligent footwear system all have distinct trademarkable layouts and images. Trademark protection has the added benefit of lasting longer than patent protection. Trademark protection would not result in a monopoly because a brand can design something in many ways, even if athletic brands use the same software and functional footwear concepts. For example, Nike has a trademark for their “swoosh” symbol printed on most of their shoes and clothing, yet many competitors still sell similar products.

U.S.C. §1052 (2022) (stating trademarks are not given for functional things that are either utilitarian or aesthetic functionality).

184. See Qualitex Co. v. Jacobson Prod. Co., 514 U.S. 159, 166 (1995) (citing Inwood Laboratories, Inc. v. Ives Laboratories, Inc., 456 U.S. 844, 850 n.10) (“[A] product feature is functional, and cannot serve as a trademark, ‘if it is essential to the use or purpose of the article or if it affects the cost or quality of the article,’ that is, if exclusive use of the feature would put competitors at a significant non-reputation-related disadvantage.”).

185. See id. at 168–170 (holding colors can be trademarked if colors are not functional and can identify and distinguish and indicate source of goods).

186. See Wal-Mart Stores v. Samara Bros., 529 U.S. 205, 216 (2000) (concluding product design is not inherently distinctive and requires secondary meaning to be considered trade dress in suit regarding children’s clothing designs).


189. See In re Morton-Norwich Prods., 671 F.2d 1332, 1340–41 (C.C.P.A. 1982) (providing factors to evaluate utilitarian functionality (1) if there is utility patent that discloses utilitarian advantages of design, (2) advertising that advertises utilitarian advantages of design, (3) if there are alternative designs available, and (4) if design resulted from simple or inexpensive method of manufacture).

3. **Non-Disclosure Agreements**

NDAs could also be useful because they will keep new products that are still under development confidential. Instead of filing for provisional patent applications while coming up with a concept for a new show, companies can include NDAs in their transactions to protect their ideas. While inventors cannot file provisional applications for design applications, product inventors can utilize NDAs until the product is completed and ready for commercial sale.

Sports gear companies can benefit from three different types of NDAs while preparing to launch a new product. First, employer-employee NDAs prevent employees from leaving the company and sharing valuable information. Second, company-contractors NDAs allow companies to use contractors without risk. Third, seller-buyer NDAs can prevent buyers from sharing confidential information and reverse-engineering a product.

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191. See 4 Things You Should Know About Non-Disclosure Agreements, THOMSON REUTERS (Mar. 11, 2022), https://legal.thomsonreuters.com/en/insights/articles/4-things-to-know-about-non-disclosure-agreements [https://perma.cc/ZA5M-FXBT] (explaining NDAs are used to ensure information will remain confidential between parties and are often used with investors, vendors, and suppliers).

192. See id. (mentioning NDAs are commonly used for marketing strategies and other valuable or sensitive information to avoid having employees share information with competitors); see also How to Protect Your Intellectual Property With a Non-Disclosure Agreement, THE MICHELSON INST. FOR INTELLECTUAL PROPERTY (Aug. 25, 2020), https://michelsonip.com/intellectual-property-non-disclosure-agreement/ [https://perma.cc/6TE5-SWS5] (noting NDAs are “one of the single most important legal agreements you can use to protect your intellectual property”).


194. See What are All the Types of NDAs?, TRESSLER, https://tresslerassociates.com/what-are-all-the-types-of-ndas/ [https://perma.cc/Y4UZ-WEF6] (last visited Mar. 23, 2023) (listing different types of unilateral or one-way NDAs that businesses can benefit from).

195. See id. (noting employer-employees NDAs are one of most common types of NDAs).

196. See id. (sharing companies often “hire temporary contractors for . . . short-term project[s]”).

197. See id. (explaining seller-buyer NDAs can protect business operations, intellectual property, production processes, and computer technology); see also Reverse Engineering, CORNELL LAW SCHOOL, https://www.law.cornell.edu/wex/reverse_engineering [https://perma.cc/CE7K-CW7R] (last visited Jan. 2, 2023) (defining reverse engineering as “method or process of developing or manufacturing a known product” by “working backward[s]” or “taking apart . . . known product”).
NDAs provide another option for companies to confidently maintain confidential information regarding their athletic footwear. 198

IV. FINISHING THE RACE: CONCLUSION

Intelligent athletic footwear and trackable sensors in athletic equipment are gaining traction and are on trend to be a large consumer product in the coming future. 199 Athletes are already relying on biometrics provided by such equipment to supplement their training and conditioning. 200 Many people already use wearable trackers and athletic footwear with sensors, even for general exercise. 201 Intelligent athletic footwear is on track to be a staple household item. 202 As a result, utility patent protection for intelligent athletic footwear is not the best choice. 203 Intelligent footwear is better suited for design patents and trademark protection. 204 Issuing patents for broad ideas such as intelligent athletic footwear systems and monitoring devices could lead to severe monopolization. 205 A monopoly could hurt competition in the marketplace and impede the progress of science. 206

198. For further discussion of NDAs, see supra notes 191–197 and accompanying text.

199. See Fitbits of the Future: What’s Next for Biometric Data in Health?, supra note 159 (finding garments, shoes, jewelry, and watches with wearable biometric tracking technology are all new and upcoming areas of wearable fitness devices).

200. For further discussion of the importance of biometrics, see supra note 145 and accompanying text.


202. For further discussion of uses of wearable fitness trackers, see supra note 199 and accompanying text.

203. For further discussion of utility patent protection for intelligent footwear, see supra notes 30–44 and accompanying text.

204. For further discussion of design patents for intelligent footwear, see supra notes 62–72 and accompanying text.

205. See General Information Concerning Patents, supra note 17 (“By protecting intellectual endeavors and encouraging technological progress, the USPTO seeks to preserve the United States’ technological edge, which is key to our current and future competitiveness.”); see also Yasiejkjo, supra note 164 (indicating patent owner of system for remotely detecting person’s activity level and method for non-intrusive health monitoring sued Adidas regarding its wearable fitness devices).

206. See Thoma, supra note 39 (explaining monopolies raise prices and lower production of goods and consumers need various products and goods to make market competitive). However, monopolies can have some benefit if there are multiple companies with a monopoly in the same market, creating a market that is “monopolistically competitive.” See id. (noting all monopolies are not and “a small degree of monopoly power may even be desirable.”).
The best way to provide athletic companies with the protection they seek while preventing the monopolization of abstract ideas is to look into other areas of intellectual property protection.  

Design patents are a good alternative to utility patent protection to avoid monopolization of an idea because they only protect the aesthetic design. Athletic companies can also utilize trademarks and NDAs to help protect unique intelligent footwear designs.

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207. For further discussion of alternative options of protection, see *supra* notes 171–193 and accompanying text.

208. For further discussion of design patents, see *supra* notes 171–193 and accompanying text.

209. For further discussion of trademarks and NDAs, see *supra* notes 171–193 and accompanying text.

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