

The Limited Monopoly

Patent Law 101 — What Is Patentable?

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The Law.

In the United States, federal statute 35 U.S.C. 101 codifies the patentability of inventions, stating that, “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.” It sounds simple enough... but this leading statute has been the subject of many arguments, both in court, and in society.

So what does it mean? Let’s start at the end. The word “title” refers to Title 35 of the United States Code, collectively referred to as “the patent statutes.” Key requirements for patentability that are defined in Title 35 are “newness”, i.e. novelty (35 U.S.C. 102), unobviousness (35 U.S.C. 103), and the applicant’s provision of a detailed written description of the invention (35 U.S.C. 112). These are subjects for another column (or more).

That leaves us with the two main prongs of 101. For an invention to be patentable, it has to be a.) useful, and b.) considered as within at least one of the four cited categories of patentable subject matter. Historically, this latter requirement has been where much of the controversy occurs.

The History.

The Patent Act of 1793¹, written by Thomas Jefferson, contains the original statute that has evolved into 101. It has changed very little over time, with the current statute having been enacted in the Patent Act of 1952. The term “art” was changed to “process,” but otherwise, Jefferson’s original wording remains intact. The law defines the four categories of inventions that are appropriate subject matter of a patent to be a process, a machine (also known as an apparatus), a manufacture (also known as an article), and a composition of matter.

Documents accompanying the 1952 Act show that Congress intended statutory subject matter to “include anything under the sun that is made by man.”² Yet precisely what Congress intended in all cases is not so simple, due to the very nature of technology and invention. Who is to say what the 82nd Congress intended in light of some modern inventions, with technologies that didn’t even exist in 1952?

The Evolution.

Answer: The Courts. This is well illustrated in the case of *Diamond v. Chakrabarty*.³ Anand Chakrabarty, a biochemist at General Electric, invented a bacterium in the early 1970s that could break

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crude oil down into harmless byproducts. It was clearly useful for oil spill remediation. Using cutting edge technology of the day, it was attained through genetic modification – in other words, by the action of man, not by nature.

In June of 1972, Chakrabarty applied for a patent on his invention. The Patent Office rejected his application under 35 U.S.C. 101, on the grounds that the subject matter was non-statutory. The operative precedent was a ruling by the Commissioner of Patents in



1889⁴ that one could not obtain a patent on living subject matter, i.e. “products of nature.” Chakrabarty appealed to the Patent Office Board of Appeals and was denied, but subsequently, the U.S. Court of Customs and Patent Appeals overturned the Patent Office Board of Appeals in Chakrabarty’s favor. Sidney Diamond, the Commissioner of Patents and Trademarks, then appealed the case to the U.S. Supreme Court.

In a narrow 5 – 4 landmark decision in June of 1980, the Supreme Court ruled in favor of Chakrabarty. One key point cited by the Court was that, “His claim is not to a hitherto unknown natural phenomenon, but to a nonnaturally occurring manufacture or composition of matter – a product of human ingenuity...” On March 31, 1981, U.S. patent 4,259,444 issued to Chakrabarty and his assignee, General Electric. The “References Cited” by the Patent Office on the cover page included only three journal citations, and no patents. That was because no patent prior art existed – an exceedingly rare situation.

Subsequent rulings within the Patent Office and the courts have found higher organisms including animals to be statutory subject matter. In an early case, *Ex Parte*

*Allen*⁵, the Board of Patent Appeals and Interferences found that an oyster that was chromosomally altered in a laboratory was patentable under 101. Shortly thereafter, citing *Allen* as precedent, the Patent Office issued U.S. patent 4,736,866, “Transgenic Non-Human Mammals” for a genetically modified mouse, to researchers Phillip Leder and Timothy Stewart at Harvard University.

The very title of this patent begs the question... so what about patenting genetically engineered humans? The rapidly evolving field of genetic engineering, and rulings such as *Chakrabarty* had generated a firestorm of controversy through the 70s and 80s. In its *Ex Parte Allen* ruling, the BPAI was sensitive to this issue, and further stated that human beings cannot be patented. Yet it was not the patent statutes that were the basis of this ruling. Instead, it was the 13th Amendment, which states that, “Neither slavery nor involuntary servitude... shall exist within the United States.” Since one human cannot hold a property right over another human, and since a patent is a form of property right, the BPAI held that patenting of a human is not permitted.

Where will it all end?

Well... it won’t. The law must continue to evolve in order to keep pace with technology, commerce, and the public interest. Currently, the hotly contested areas pertain to business methods and software patents, as well as the life sciences. And the questions posed go far beyond those of intellectual property rights, extending to matters of public policy and bioethics – as well as deeply held personal and religious beliefs.

1. Act. of Feb. 21, 1793, ch. 11, §1, 1 Stat. 318.
2. S. Rep. No. 1979, 82d. Cong., 2d. Sess., 5 (1952); H. Rep. No. 1923, 82d. Cong., 2d. Sess., 6 (1952);
3. *Diamond v. Chakrabarty*, 447 U.S. 303, 308-09, 206 USPQ 193, 197 (1980).
4. *Ex parte Latimer*, 1889 Dec. Com. Pat. 123.
5. *Ex parte Allen*, 2 U.S.P.Q. 2d, p. 1425, BPAI, 1987.

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