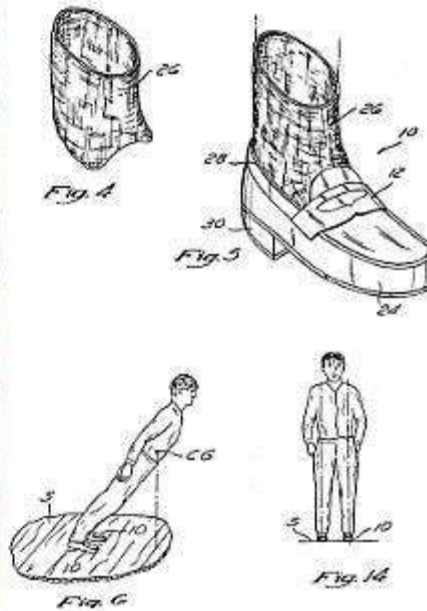


A Thriller in the Patent Office



Overview

This lesson uses the story of Michael Jackson’s patented “anti-gravity shoes” to introduce students to intellectual property, innovation, and the role of government in protecting creative ideas. Students will explore why patents exist, what makes an invention patentable, and how legal systems shape innovation in society. The lesson blends pop culture with civics, economics, and law to engage high school students in understanding both the process and implications of patent law.

Essential Question: *How does the patent system balance protecting inventors’ rights with promoting innovation for society?*

Supporting Questions:

- What are the requirements for an invention to receive a patent?
- Why did Michael Jackson pursue a patent for his “anti-gravity shoes”?
- How long should inventors be able to keep exclusive rights before society gains access?
- How do government policies like patents encourage or limit innovation?

Objectives: By the end of this lesson, students will be able to:

- Explain the purpose of patents and describe the five requirements for patentability (novelty, non-obviousness, utility, enablement, and patentable subject matter).
- Analyze Michael Jackson’s “anti-gravity shoe” patent as a case study in innovation.
- Evaluate the effectiveness of patents as a government tool to encourage creativity and entrepreneurship.
- Develop their own ideas for improving an invention and consider whether those ideas would be patentable.

Illinois Learning Standards for Social Science (9–12)

- **SS.EC.1.9-12:** Analyze how scarcity and incentives influence choices to consume or produce.
- **SS.EC.4.9-12:** Evaluate government policies to improve outcomes, address inequality, or reduce inefficiencies.
- **SS.CV.9.9-12:** Evaluate public policies in terms of intended and unintended outcomes.
- **SS.IS.4.9-12:** Gather and evaluate information from multiple sources.
- **SS.IS.6.9-12:** Construct and evaluate explanations and arguments.

Common Core State Standards

- **CCSS.ELA-LITERACY.RH.9-10.2:** Determine central ideas of a source and provide an accurate summary.

Materials and Preparation

- Handout: **A Thriller in the Patent Office**
- Handout: **Discussion Questions**
- Visual: **Anti-gravity Shoes**
- Projector or board for displaying patent drawings (optional)

Time Required

1–2 class periods (45–50 minutes each)

Procedure

Part 1: Hook & Background (15 minutes)

1. Play a short clip of Michael Jackson’s “Smooth Criminal” anti-gravity lean. ([Michael Jackson - Smooth Criminal](#))
2. Ask: *How do you think he pulled off this move live, without movie magic?*
3. Introduce the idea that Jackson and his team patented a solution — his “anti-gravity shoes.”

Part 2: Understanding Patents (20 minutes)

1. Distribute the **A Thriller in the Patent Office** handout. Read and discuss the information with the class.
2. As a class, walk through the five requirements for a patent.
3. In small groups, have students apply each requirement to Jackson’s shoes: Did the invention meet the criteria? Why or why not?

Part 3: Discussion and Application (15–20 minutes)

1. Use the **Discussion Questions** handout to engage students in evaluating the role of patents. Be sure students understand that patents encourage innovation by rewarding inventors with temporary exclusive rights, allowing them to profit from their creativity. They also promote technological progress by making new ideas available to the public.
2. Display the **Anti-gravity Shoes** visual. Extend by asking students to brainstorm improvements to Jackson’s shoes or to design an invention of their own.
3. Ask: *Would your improvement qualify for a patent? Why or why not?*

Extension (Optional)

- Encourage students to research another pop culture or historical patent (e.g., the telephone, the iPhone, or Beyoncé’s stage design). They can present their findings on how the invention met patent requirements.

Challenge students to find where the idea of patents and copyrights is mentioned in the Constitution. What specifically does the Constitution say? Why do students think the Framers thought this idea was so important it should be mentioned in the document? Motivated students might investigate what Madison had to say about this clause in Federalist 43.

HANDOUT: A Thriller in the Patent Office

Background on the Artist

Michael Jackson was an American singer, songwriter, and dancer who became one of the most influential and best-selling artists of all time. Born on August 29, 1958, in Gary, Indiana, he began his career as a child star with his family band, The Jackson 5, achieving early fame with hits like “I Want You Back” and “ABC.”

In the 1980s, Jackson revolutionized pop music with his solo albums, particularly “Thriller” (1982), which remains the best-selling album of all time. His signature dance moves and groundbreaking music videos like the “moonwalk” in “Billie Jean” and the “anti-gravity lean” in “Smooth Criminal” cemented his status as a global icon.

Despite his immense success, Jackson’s life was marked by controversy, including legal battles and intense media scrutiny. However, his musical legacy remains unmatched, with numerous awards, including 13 Grammy Awards, and over 400 million records sold worldwide.

Michael Jackson passed away in 2009, but his influence on music, dance, and pop culture endures. He remains the undisputed King of Pop.

The Issue

Aside from the moonwalk, one of Michael Jackson’s most iconic dance moves was the gravity-defying lean from his “Smooth Criminal” music video. He wanted to bring this stunning illusion to the stage for live performances to entertain his audiences, but there was one major challenge—it’s physically impossible to lean 45 degrees forward without toppling over. In the music video, Jackson and his dancers had achieved the effect using movie magic—a series of hidden cables and pulleys. However, attempting the same trick in a concert setting with multiple performers would have been impractical, as the cables would quickly become a tangled mess. Not only that, but the sight of cables would lose the magic of the original.

So, Michael Jackson and his team set to work finding another solution to defy gravity and thrill audiences worldwide. In the process, they invented “anti-gravity shoes,” an invention so novel that they filed for a patent with the United States Patent and Trade Office to make sure other artists couldn’t copy Michael’s moves.



Gravity defying lean.

Patent Requirements

A patent is a legal right granted by the government that gives inventors exclusive control over their invention, typically for 20 years from the date of application. This means that no one else can make, use, or sell the invention without permission. In exchange for this right, the inventor is required to disclose details about the invention publicly so others can learn from it and build on the knowledge.

There are three types of patents: utility patents, design patents, and a special category for plant patents. The most familiar and basic kind of patents are utility patents, which protect inventions such as machines, processes, or chemical compositions and are the type of patent Michael Jackson received. Design patents protect ornamental designs for manufactured items. Plant patents protect new and distinct varieties of plants that are asexually reproduced. To obtain a patent, an invention must meet the following criteria:

- **Novelty** – The invention must be new and not previously disclosed or publicly available. If the invention has already been described in a prior patent, a publication, or is already being publicly used, the invention is not considered novel and cannot be patented.
- **Non-Obviousness** – The invention must be a significant improvement over existing ideas and not something an expert in the field could easily think of. If the difference between the new invention and what already exists (known as prior art) is minor or obvious, the patent may be denied.

- **Utility** – The invention must be useful and serve a practical purpose. It should have a clear function and be operable for its intended use. Abstract ideas, laws of nature, and purely theoretical concepts do not qualify.
- **Enablement** – The patent application must include a detailed description of the invention that enables a person skilled in the relevant field to make and use it without undue experimentation. This means the invention must work and cannot just be a theoretical idea.
- **Patentable Subject Matter** – Not everything can be patented. To be eligible, an invention must fall into one of the statutory categories: process, machine, manufacture, or composition of matter. Natural phenomena, abstract ideas, and mathematical formulas are excluded unless they are applied in a novel and useful way.

The Patent Application Process

Research and Preparation – Before applying, inventors conduct a patent search to ensure their idea is unique. This can be done through the United States Patent and Trademark Office (USPTO) database. As of 2025, the fee for this search is \$770.

Drafting the Application – The patent application must include:

- a. A written description of the invention.
- b. Claims that define the scope of protection.
- c. Drawings (if applicable) to illustrate the invention.
- d. Background information explaining the problem the invention solves.

Filing with the USPTO – Inventors can choose between a provisional patent application, which provides temporary protection for one year, or a non-provisional patent application, which is the formal request for a patent. The application fee is \$300.

Patent Examination – Once filed, a patent examiner reviews the application to determine if it meets the five requirements discussed above. The examiner may request revisions or additional information.

Approval or Rejection – If the application is rejected, the applicant can modify the application to address the examiner’s concerns more completely or eventually appeal the decision to the courts. If the patent is approved, the inventor must still pay maintenance fees to keep it active at intervals of 3.5 years, 7.5 years, and 11.5 years after the date of grant of a patent. For 2025, these fees amount to \$2,150, \$4,040, and \$8,280, respectively; although for an individual inventor, those fees are lowered to \$430, \$808, and \$1,656.

Michael Jackson's Patent

Michael Jackson and his team filed for a patent on June 29, 1992. On October 26, 1993, they were granted U.S. Patent No. 5,255,452 for “a method and means for creating an anti-gravity illusion . . . by means of specialized footwear and accessories . . . which allows the entertainer to lean forward on a stage a very acute angle relative to the stage floor to achieve the illusion of defying gravity.”

The shoes were designed with a unique heel that features a recess and a V-shaped slot at the bottom. This recess is specifically shaped to engage with the head of a hitch that is raised from below the performance stage. The V-shaped guide at the entrance to the recess helps in sliding the shoe onto the hitch. The shoes also have fastening straps and may include an extension to cover the wearer's ankle, along with a sock-like covering to conceal the specialized nature of the footwear. This hitch member is typically comprised of a pair of steel bolts affixed to a metal plate positioned under the stage. The system allows a performer wearing the specialized shoes to slide their heels onto the projecting hitch members and stabilize them as they lean forward beyond their center of gravity, creating the illusion of defying gravity. After the move, performers can slide their shoes backward to disengage from the hitches, which can then be retracted into the stage floor. The images in the Anti-gravity Shoes visual, taken from the patent application, help to illustrate the idea.

Using Michael Jackson's patent, let's review the five requirements discussed earlier to see why the anti-gravity shoe was granted a patent:

1. **Novelty:** The invention was new at the time of filing. The background of the invention section of the patent discusses existing methods, such as cables and harnesses, but highlights their limitations for live performances. The patent explicitly states that “to the best of our knowledge and belief the prior art does not disclose or suggest the specialized footwear permitting an entertainer to freely move about a stage, while at the same time, enabling engagement with a movable hitch or post, projectable through the stage floor, to enable the illusion to be performed.”
2. **Non-obviousness:** The invention was not obvious to someone skilled in the art at the time it was made. While footwear and stage mechanisms existed, the specific combination of a uniquely designed shoe heel with a V-shaped slot and recess that could detachably engage with a movably projectable hitch on a stage to create a particular illusion was not a straightforward or obvious combination of existing technologies. The creation of this specific system to achieve a visually striking and seemingly impossible dance move suggests inventive ingenuity. The success of the illusion and its impact on audiences further support its non-obvious nature.

3. **Utility:** The invention has a specific and useful purpose: to create an anti-gravity illusion for entertainment purposes. The patent describes a functional system that allows performers to achieve a visually impressive effect during live shows and recorded performances, which was demonstrably used by Michael Jackson. The invention functions as intended by providing a means for a performer to lean far beyond their normal balance point without falling.
4. **Enablement:** The patent provides a sufficiently clear and detailed description of the invention, including written descriptions and drawing, that would enable a person skilled in the relevant arts of footwear, entertainment, and stage design to make and use the invention. The patent describes the construction of the shoes, the mechanism of the hitch, and how they interact to create the anti-gravity illusion. The detailed drawings further illustrate the components and their relationships.
5. **Patentable Subject Matter:** The invention falls under the category of patentable subject matter, which includes processes, machines, manufactures, and compositions of matter, or improvements thereof. Michael Jackson's patent covers specialized footwear (a manufacture) and a method (the way the shoes engage with the stage mechanism) for creating a specific visual effect.

Despite successfully obtaining the patent, Michael Jackson failed to pay the required patent maintenance fees and in 2005 his patent was deemed abandoned, making it available for use by the public.

Conclusion

Michael Jackson's journey from musical legend to inventor demonstrates how creativity transcends artistic boundaries. His patented anti-gravity shoes not only enhanced his performances but also showcased the power of innovation in entertainment. By securing a patent, Jackson and his team ensured that their groundbreaking idea remained protected—at least until the patent lapsed. Patents play a crucial role in protecting innovation.

While the process requires time, effort, and money, the rewards of securing exclusive rights to an invention can be significant. Whether you want to be an engineer, scientist, entrepreneur, or inventor, understanding patent law can be a valuable asset for the future. Whether in music, dance, or engineering, the patent system continues to serve as a vital tool for protecting and encouraging inventive minds.

Handout: Discussion Questions

1. Why are patents important for society?
2. Why do you think Michael Jackson pursued a patent for his anti-gravity shoes?
3. Do you think abandoning the patent was a missed opportunity?
4. How long should inventors have exclusive rights before their ideas enter the public domain?
5. How do patents encourage innovation, and what are some downsides?
6. If you were redesigning Jackson's shoes, what improvements would you make? Would they be patentable?
7. Do you think the anti-gravity shoes met all the patentability requirements (novelty, non-obviousness, utility, enablement, and patentable subject matter)?

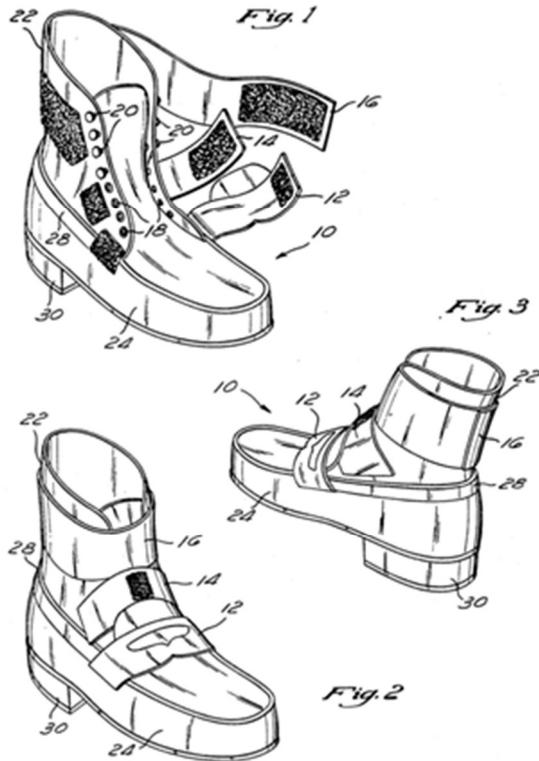
Visual: Anti-gravity Shoes

U.S. Patent

Oct. 26, 1993

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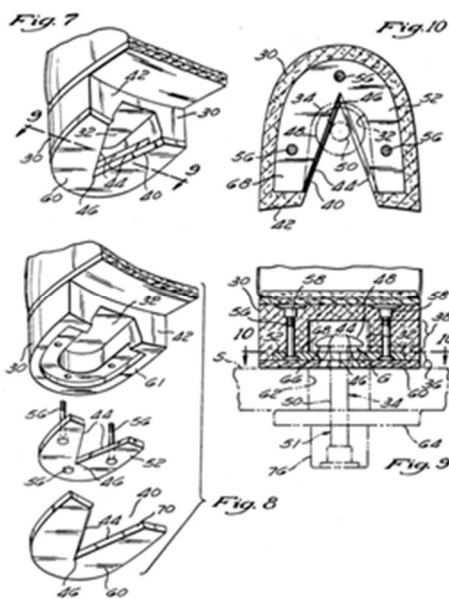


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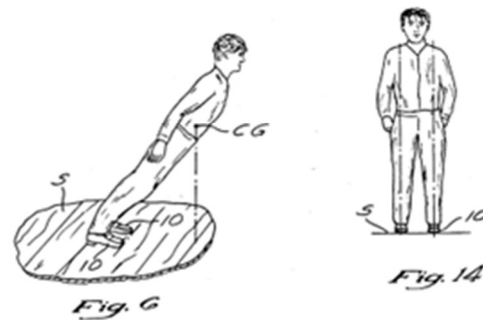
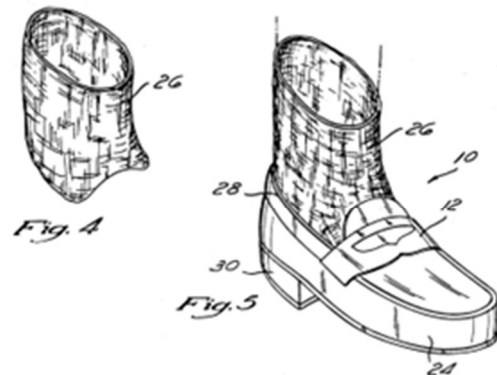


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