Prototype
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The Lemelson Center
for the Study of Invention & Innovation
Smithsonian
National Museum of American History

The Invisible Inventor?

by Eric S. Hintz

Let's conduct a hypothetical experiment. Suppose you were to stop the average person on the street and ask, "Who invented the telephone?" Most would answer "Alexander Graham Bell." Now, ask that same person about a more modern invention. Who invented the photocopier? Chances are that person would name a company like Xerox or Canon, and not an individual. What does this scenario suggest about the changing nature of invention and its cultural implications? Why have inventors--once revered as heroes--become "invisible" while corporate brands have become increasingly associated with high-tech innovation?

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Image: Alexander Graham Bell, about 1876; inset: American Telephone and Telegraph Company logo, 1920. Courtesy of Smithsonian Institution Archives and Wikimedia Commons.

Notes from the Director

August is National Inventors' Month and the Lemelson Center has been celebrating with a number of high-profile events. Established in 1998 by the Academy of Applied Science, the United Inventors Association, and *Inventors Digest* magazine, National Inventors' Month recognizes the entrepreneurial spirit of independent inventors, and the Lemelson Center's programs highlight that ordinary people, regardless of circumstances, can be inventors, or at least take part in the invention process.

Often overlooked on these occasions, however, are the little-known contributions of the rich and famous. Take the case of musicians and movie stars, for example. Even though they are creative in their own fields, it never occurs to us that they could also be inventors. We were all shocked to learn of Michael Jackson's sudden death. But, as we said our farewells to this amazing performer, we were in for another surprise: he had a patent. Awarded jointly to him and to two of his costume-men in 1993, the patent described specially designed shoes that gave the illusion of his leaning beyond his center of gravity. The move and the associated gadget were created for his 1988 music video, *Smooth Criminal*, something to upstage his unique (I can't say patented) "moonwalk," perhaps.

We shouldn't be all that surprised by Jackson's invention; he was a known technological enthusiast. Consider, for example, that widely publicized video arcade he installed at Neverland Ranch. Jackson was a gamer. Still, I was somewhat taken aback by reports that he once planned to build a fifty-foot robot likeness of himself that would roam Las Vegas publicizing his acts, an image as much threatening as it was peculiar. That he not only invented but also sought and earned a patent is no mystery. Protecting an invention would come naturally to a man who zealously guarded his music rights and was reported to have acquired the copyrights to the Beatles' songs. Then again, perhaps being certified by the U.S. Patent and Trademark Office as a bona fide inventor conferred a kind of status and satisfaction that even Hollywood could not bestow.

Jackson was far from the only "patented" celebrity performer. For instance, his friend Marlon Brando also dabbled in invention, at least toward the end of his life when he earned several patents related to a device for tuning drumheads. One can envision him on some beach in Tahiti, turning out invention ideas to the beat of bongos. The ranks of improbable inventors also include two of the Marx brothers, who showed that even comic geniuses could take to the serious task of invention. Unlike Jackson's and Brando's, however, their inventions did not relate specifically to entertainment, at least not directly. Zeppo (Herbert), considered the mechanical genius of the family, patented a cardiac pulse-rate monitor, while Gummo (Milton) earned his patent for "Improvements in Packing-Racks," something that undoubtedly came in handy for life on the road.

Patriotism motivated other performers. During World War II, the stunning Austrian-born movie star Hedy Lamarr approached her Hollywood neighbor, the avant-garde composer George Antheil,

about contributing ideas to the National Inventors Council, established under the National Bureau of Standards to solicit inventions from U.S. citizens for the war effort. She even thought of cashing in her acting career to become an inventor. Their 1941 patent for "frequency hopping" was applied to secret communications and to radio-guided torpedoes, among other weapons. Eventually, some of this technology found its way into Wi-Fi networking and wireless telephony.

I could go on and on. These are just a few examples from a long list of known celebrity inventors. Others can be found through Wikipedia, Google Patent Search, and the U.S. Patent and Trademark Office sites, among other online sources. (Be advised, though, that in some cases the patents will be under the entertainers' real names and not their stage names.) So as we honor the anonymous and ordinary inventor this month, let us not forget the unheralded role of others. Michael Jackson serves to remind us that anybody--even the very rich and the very famous--can invent.

Best regards till next month,
Arthur Molella
Jerome and Dorothy Lemelson Director

Have You Seen?

Since its founding in 1995, the Lemelson Center has brought students, Museum visitors, and inventors together in our Innovative Lives program series. From the inventor of the Snugli baby carrier to an astronaut inventor, from solar power to electric guitars, Innovative Lives has highlighted the diversity of inventors and their work. Explore these inventors' inspiring stories in the Innovative Lives section of our website.

Image: The Lemelson Center's Innovative Lives website features the stories of contemporary inventors.

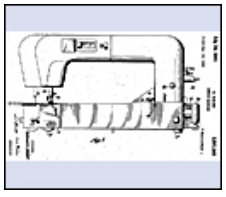
Trivia Challenge

In each edition of *Prototype,* we offer a question about an invention or inventor that you and your friends and family can try to answer. Sometimes the answer can be found on the Lemelson Center's website, where you can also learn a little more about the subject. Email your answer to us at prototype@si.edu along with your name and mailing address. Each month we'll select winners randomly to receive a small prize from the Center.

Thank you to everyone who entered the July challenge and congratulations to Michael K. of Washington, D.C., and Karen B. of Chapel Hill, North Carolina, who, among others, knew that Jon Hendricks is one of the originators of "vocalese," a musical style that replaces the sounds of instruments with a vocal chorus by using multitrack recording methods pioneered by Les Paul. (The Lemelson Center notes with sadness the passing of Les Paul on August 13). Hendricks and his group, Lambert, Hendricks, & Ross, launched vocalese to the forefront of jazz with their innovative debut album *Sing a Song of Basie* in 1957. To listen to a podcast with Jon Hendricks, visit our website.

This month's question: Which inventor became the first African American graduate of a Chicago beauty school, opened her own salon in 1916, and invented a permanent-waving machine used in Madam C.J. Walker's enterprises?

Image: Jon Hendricks. Photo courtesy of James Zimmerman.



From the Archives

Solomon "Sol" Adler is probably best known for his sewing machine inventions, but when you look into his portfolio of work you also see ideas and patents for a fountain pen, a window treatment, a receptacle tap, a telescoping umbrella, an ashtray, a retractable table, and jewelry designs. Adler wrote fiction as well (mostly short stories) that reflected his experiences during the early 1900s in New York City. He filled pages with themes on social protest, radicalism, mobs, unions, poverty, and sweatshop operators. In 1958 Adler wrote about theories of nuclear physics, noting, "Indeed a very bold attempt and definitely a long way from sewing machines." Adler's flow of ideas was constant and he sought to express them constantly.

Sol Adler was born on July 8, 1901, on the Lower East Side of Manhattan, one of Isaac and Mindel Adler's five children. Isaac was a tailor, so sewing machines were part of Sol's life from the beginning. As a young man, Adler apprenticed in machine shops, honing his skills until he became

an expert machinist and toolmaker; these skills eventually allowed him to build the machines he visualized. Adler's design drawings show his precision as a draftsman and engineer (he attended the City College of New York) and provide good insight into the drawing abilities that he later used in preparing patent drawings.

Adler's work on sewing machines began in the late 1930s with tinkering with his sister-in-law Bess's treadle-operated Singer machine. Bess wanted a lightweight, motorized sewing machine that had enough space between the frame and the needle for large projects such as quilts. Using his own basement machine shop, Adler began building simple frameworks for sewing machines to better understand the relationships between the parts and their functions. Adler's first sewing machine (which he dubbed the "parent machine") earned U.S. Patent 2,561,643, issued in 1951. The machine was a full-size home machine, with a concealed motor and power cord, that could also expand into a commercial-size machine. Six subsequent patents for subassemblies were derived from the "parent machine" over the next several years.

Analyzing the evolving U.S. domestic sewing machine market gave Adler ideas for further inventions, refining the machines and adding new features. Unfortunately, success was elusive; his machine with zigzag- and straight-stitch capability was rejected by several U.S. and European sewing machine manufacturers. But in 1954, Adler met Max Hugel, president of the Asiatic Commerce Corporation of New York, later known as Brother International Corporation (BIC), a subsidiary of the Nippon Company. Nippon wanted to solve certain design and operational problems it was having in developing a zigzag sewing machine for sale in the United States. Adler joined BIC, moved to Japan, and succeeded in helping correct the design issues. Adler named the machine the "Select-O-Matic" because by turning a few knobs, an operator could select one of the six patterns that the machine could produce.

Adler stayed with BIC until 1959, working on a variety of sewing machines including an automatic zigzag machine and the versatile "Pacesetter," which was unveiled in the United States to great acclaim at the Sewing Machine Show in New York City on July 18, 1955 (a version of the Pacesetter is still sold by Brother). Additionally, he worked on a line of industrial and domestic sewing machines, home washing machines, home knitting machines, and other small appliances. Adler earned several Japanese patents for his work.

In June 2009, the National Museum of American History acquired archival material and several sewing machine prototypes documenting Sol Adler's inventive life. The papers include correspondence, photographs, notes, drawings, sketches, litigation records, and printed materials that provide insight into both an independent inventor's process of invention and Japanese work culture during the post-World War II period. The Adler Papers are open for research; for more information, contact Alison Oswald at oswalda@si.edu.

Among Adler's writings is this pronouncement of his passion for invention: "When an idea is conceived by an inventor, it never leaves him in peace, it possesses him day and night until it is expressed, after which he enjoys a sense of relief and accomplishment." Happy National Inventors' Month!

Alison Oswald, Lemelson Center Archivist

Image: Drawing from Solomon Adler's U.S. Patent 2,561,643 for a sewing machine. Courtesy of U.S. Patent and Trademark Office.

Inventive Ideas for Schools and Families

On August 1 and 2, the Lemelson Center and LEGO Systems, Inc., kicked off National Inventors' Month by hosting a two-day collaborative build of an eight-foot-tall lightbulb made entirely of LEGO bricks at the Smithsonian's National Museum of American History. The universal symbol of a big idea, the lightbulb was assembled by Museum visitors with the help of LEGO master builders. It weighed 400 pounds and was made up of 300,000 LEGO bricks!

Use these instructions to build a mini-model of the lightbulb using your own LEGO bricks!

Image: The completed LEGO lightbulb at the National Museum of American History. AP Photo/Stephen J. Boitano.

Enter the *Inventors Digest* Essay Contest for Students

In honor of National Inventors' Month in August, the Lemelson Center partners with *Inventors Digest* magazine and others to sponsor the 2059 Essay Contest for middle-school and high school students.

The assignment: In 500 words or less, describe what technology, tool, or

product will shape our lives in 2059, and why. Entries will be judged on clarity and vision of how new technology or products will be used in the year 2059. Winning essays will demonstrate imagination rooted in science and engineering principles. The prizes include a laptop computer, publication in *Inventors Digest*, a year's subscription to the magazine, and more. For entry rules and more information, visit the *Inventors Digest* website.

Image: Poster for Imagine Your World in 2059 essay contest, courtesy of Inventors Digest.

Our Podcast--Prototype Online: Inventive Voices

This past June the Lemelson Center featured environmentalist Lester Brown in a Portrait of Invention public program. In this podcast of segments from his onstage interview with historian Marc Pachter, Brown talks about growing up on a farm, and about how technology, innovation, and economic forces today will determine the future of our global environment. *Tune in!*

Image: Lester Brown. Smithsonian photo by Hugh Talman.

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Contact us at prototype@si.edu.

General Smithsonian Visitor Information: 202-633-1000
or see more online:
Lemelson Center website
National Museum of American History Frequently Asked Questions