

Mothers of Invention

SPECIAL PRESENTATION: MOTHERS OF INVENTION



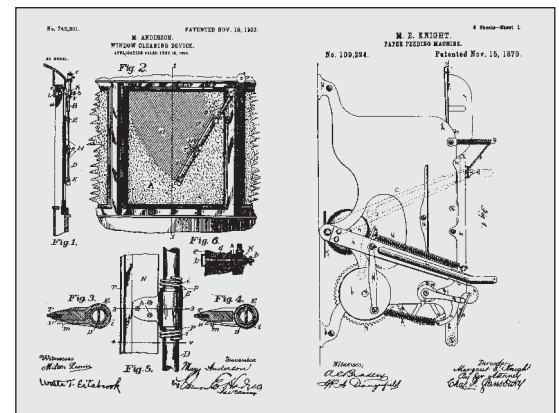
Major technological innovations often start with the simple desire to make routine tasks easier and safer. These basic ideas provide the impetus for grander transformations in transportation, medicine and other aspects of daily life. The popular assumption has been that the gender of the inventor is male – Alexander Graham Bell, Thomas Edison, Benjamin Franklin. *Mothers of Invention* reveals that women have been responsible for some of the most significant inventions in U.S. history. This documentary

explores the creations of female innovators from the 18th century until the present day, highlighting women's contributions to the worlds of science, technology and consumer goods. This program shows the obstacles confronted by women unable to secure patents on their creations because of their inability to own property. Despite these and other barriers, women proceeded as creative trailblazers, designing a wide range of items from refrigerated rail-cars to cosmetics to rocket devices.

Mothers of Invention highlights several female inventors, providing a historical context for their activities. The documentary uses historical footage, images and commentary from historians to frame these “Lady Edisons” in their unique historical contexts. The Industrial Revolution prompted women like Margaret Knight to mastermind machines that would accelerate their monotonous tasks and make hard work more bearable. The tumult of World War II thrust many women into the work force, opening them up to new avenues of discovery; few people know that a famous Hollywood actress was also the creator of an anti-rocket missile device. *Mothers of Invention* shows how women have dedicated themselves to finding new ways of organizing life and achieving excellence throughout U.S. history.

CURRICULUM LINKS

This program is useful for history, social studies, and science and technology courses. It is appropriate for middle-school and high-school students. It is an excellent resource for *Women's History Month* lesson-plans and activities. It fulfills the following standards as outlined by the National Council for History Education: Human Interaction with the Environment, and Comparative History of Major Developments.



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VOCABULARY

gender	the cultural and social context for being male or female as defined by society
innovation	the introduction of something new; creation of an image, idea or device
spindle	any of various rods or pins holding a bobbin in a textile machine
patent	protected by a trademark or a trade name so as to establish proprietary rights
fail-safe	a feature that prevents accident or potential failure
entrepreneur	one who organizes, manages and assumes the risks of a business or enterprise and possesses readiness to engage in daring action; a unit of economic or business organization
ergonomics	the science of designing and arranging things people use so that humans and objects interact most efficiently and safely with each other
intellectual property	private property rights in ideas; laws protecting intangible, creative property



DISCUSSION ON QUESTIONS

1. What were some of the initial obstacles women inventors faced?
2. What were some of the ways women managed to achieve careers and patent inventions even when they were deemed unfit for such activities?
3. What was the primary reason Margaret Knight became an inventor during the Industrial Revolution?
4. Most of the inventors in the documentary were women who lived in cities. What aspects of urban life do you think made them more likely to invent new items?
5. Madame C.J. Walker was famous for her contributions to the cosmetic industry. Why do you think she found such a tremendous market for her products during the 1910s?
6. What were some of the ways World War II changed the possibilities for women in science and technological fields? By what percentage did women in the work force increase during these years?
7. After World War II, many women concentrated their efforts on creating new products for the home. What are some examples of their inventions?
8. This documentary features several examples of women's contributions to health and medicine. What are some of their inventions discussed in the film?
9. Which of the women featured in this documentary do you most admire?

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EXTENDED ACTIVITIES

1. Throughout U.S. history, patents have been one of the most important ways for inventors to have their innovations acknowledged and protected. In *Mothers of Invention*, the Patent Act of 1790 is noted as a major victory for women as it included them in these protections. Locate the Patent Act of 1790 on the Internet and print out a copy of it. Read and analyze the Patent Act of 1790. What are the protections it guarantees? What language proves that women were included in its provisions? Why was the Act particularly important for women? How did women's property rights change over time?
2. Many female inventors participated in the 1876 Centennial Exhibition in Philadelphia, showcasing their technological and practical innovations. Break up into groups of four or five. In your groups, research this event and discover who these inventors were and what they created. Collect information on these women inventors, where they lived, and what items they displayed at the Exhibition. Organize your findings in posterboard form, including biographical details of a few of these women and their inventions. If possible, also include important dates in women's history that led up to these achievements.
3. March is *Women's History Month*, providing us with an excellent opportunity to reflect upon how women have gained more equitable rights in U.S. society. *Mothers of Invention* shows how female inventors used their own ingenuity to protect their inventions even when they were barred from obtaining patents legally. Imagine that you are a young woman who has invented a machine, device or household item that is unprotected by a patent. You discover that your father has been selling your item for profit and keeping the proceeds. Write a journal entry describing your feelings, including why you think patents are necessary for both genders.
4. This documentary features an interview with the female astronaut Ellen Ochoa. Ochoa is only one of dozens of women who have contributed to space research in the U.S. and throughout the world. Research the history of Ochoa or another significant female inventor such as Madame C.J. Walker. Collect biographical background information on the woman of your choosing, including when she lived and the historical context for her work. On a piece of construction paper, create a mini-biography of this person, including biographical information, images, and details of her inventions. In a short oral presentation, share your mini-biography with your class or group.



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RESOURCES

Books:

- Macdonald, Anne. *Feminine Ingenuity: How Women Inventors Changed America*, (Ballantine, 1994).
- Stanley, Autumn. *Mothers and Daughters of Invention: Notes for a Revised History of Technology*, (Rutgers, 1999).
- Bundles, A'Lelia Perry. *On Her Own Ground: The Life and Times of Madam C. J. Walker*, (Scribner, 2001).
- Thimmesh, Catherina, and Melissa Sweet (Illustrator). *Girls Think of Everything: Stories of Ingenious Inventions by Women*, (Houghton- Mifflin, 2002).

Websites:

- <http://www.nwhp.org/> - The National Women's History Project
- <http://www.mtsu.edu/~kmiddlet/history/women.html> - A research guide for studying American Women's History
- http://www.princeton.edu/~mcbrown/display/women_inventors.html - Background on African American women inventors
- <http://www.si.edu/lemelson/centerpieces/ilives/womeninventors.html> - An informative essay on women inventors