

19th-Century Inventors

Read the history files to discover more about three great 19th-century inventors whose creations continue to affect our lives today.

Name: Margaret E Knight

Most Famous Invention: Paper Bags



Margaret E Knight was born in Maine, USA, on 14th February 1838. Margaret E Knight's family was not wealthy. She endured many challenges and trials during her childhood and only received a basic education. When she was still a child, she went to work in a cotton mill in order to help support her family.

At the age of 12, she witnessed an accident at the mill. She decided to invent a safety device for the mill machine, which is thought to have stopped it if something got caught in it.

In 1867, Knight was employed by the Columbia Paper Bag Company. In 1868, she invented a machine that cut and folded paper to form flat-bottomed paper bags. In the 19th century, many people believed that women were less intelligent than men and did not think that Knight could make these inventions. A fellow machinist at the factory named Charles Annan stole her design but she took him to court and won the right to call the design her own.

Knight continued to create useful inventions throughout the rest of her life.

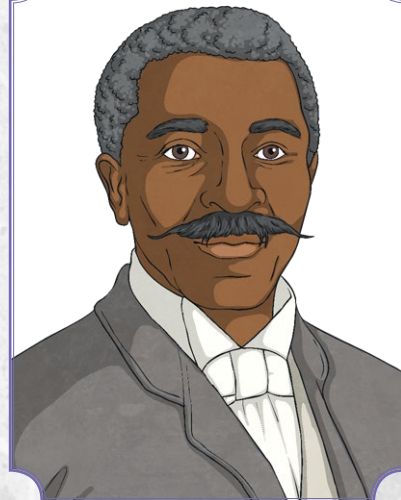
Name: George Washington Carver

Most Famous Inventions: Plant-Based Household Inventions



George Washington Carver was a Black, American teacher, scientist and inventor. He devoted his later life to inventing many useful products using plants, such as peanuts and sweet potatoes.

George Washington Carver was born into enslavement in the 1860s because his parents were enslaved people. In the 19th century, many Black people were sold into enslavement. They were not treated as equals and they were often prevented from receiving an education. In 1865, enslavement ended and Washington Carver's enslaver, Moses Carver, raised him and his brother as if they were his own sons. Carver and his wife gave them an education and Washington Carver was particularly interested in science and the arts. Later, he became a botanist (an expert in the scientific study of plants) after attending Iowa State University.



In 1896, Washington Carver became a teacher at Tuskegee University where he taught for 47 years. During this time, he spent lots of his time helping Black farmers whose farmland had become almost useless due to the cotton crops that had grown there. He taught them how to plant crops such as peanuts and soya beans that could help put nutrients back into the soil to help things grow better. Many farmers began planting, growing and harvesting peanut and sweet potato plants but they found them hard to sell. As a result of this, Washington Carver began to invent and develop many products using these crops. He invented more than 300 products from peanuts, including paints, oils and soaps and 118 from sweet potatoes, including postage-stamp glue, flour, vinegar and synthetic rubber. He even invented plant-based petrol.

Name: William Henry Fox Talbot

Most Famous Invention: Light Sensitive Paper



William Henry Fox Talbot was born on 11th February 1800 in Melbury, Dorset. He went on to become a Member of Parliament (MP), scientist and inventor.

He received his early education at home before going to Harrow School and then to Cambridge University in 1817.

In 1832, he married Constance Mundy. He was elected as the MP for Chippenham in the same year. In 1833, he visited Lake Como in Italy. He wanted to record the beauty around him but his sketching skills were limited. He dreamed up a machine that would make the sketch for him.

Fox Talbot was interested in studying light and chemicals. He used this knowledge to invent his 'art of photogenic drawing', which used light-sensitive paper. He went on to further develop photography with the use of chemicals that 'fixed' the image onto the paper.



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Questions

1. When was Margaret E Knight born? Tick one.

- ☐ 14th February 1800
- ☐ 14th February 1838
- ☐ 14th February 1867
- ☐ 14th February 1868

2. Draw **three** lines to match the inventor to their invention.

Margaret E Knight	flat-bottomed paper bag machine
George Washington Carver	light-sensitive paper
William Henry Fox Talbot	plant-based petrol

3. Which **two** inventors were born in America?

- _____
- _____

4. Fill in the missing words:

She decided to _____ a safety device for the mill machine, which is thought to have stopped it if something got _____ in it.

5. Find and copy a phrase which shows that William Henry Fox Talbot's drawings were not good.

6. Which of these inventors do you think had the most impact on our lives? Explain your answer.

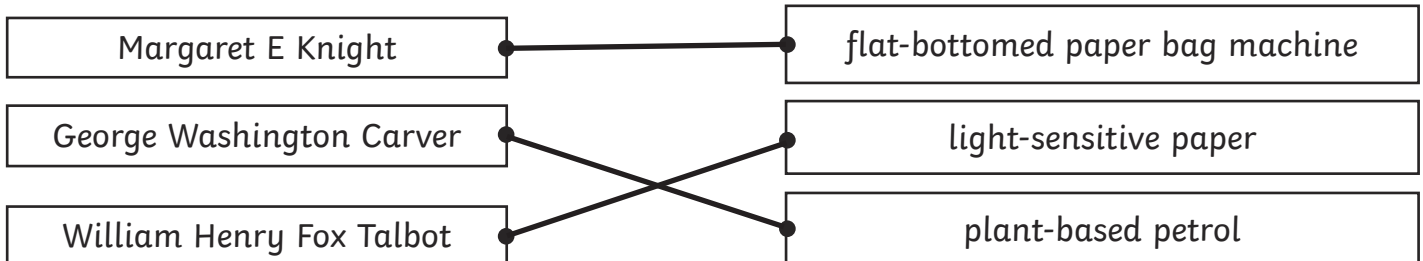
7. Sum up George Washinton Carver's inventions in your own words.

8. Why do you think that Charles Annan stole Margaret's design?

1. When was Margaret E. Knight born? Tick one.

- ☐ 14th February 1800
- ☒ **14th February 1838**
- ☐ 14th February 1867
- ☐ 14th February 1868

2. Draw **three** lines to match the inventor to their invention.



3. Which **two** inventors were born in America?

The two inventors who were born in America were George Washington Carver and Margaret E Knight.

4. Fill in the missing words:

She decided to **invent** a safety device for the mill machine, which is thought to have stopped it if something got **caught** in it.

5. Find and copy a phrase which shows that William Henry Fox Talbot's drawings were not good.

his sketching skills were limited

6. Which of these inventors do you think had the most impact on our lives? Explain your answer.

Pupils' own responses, such as: I think that William Henry Fox Talbot had the most impact on our lives because everyone enjoys taking photos and looking back on them to remember happy or exciting events from our lives.

7. Sum up George Washington Carver's inventions in your own words.

Pupils' own responses, such as: George Washington Carver's inventions were all useful objects and materials that were made from peanuts and sweet potatoes. He made over 300 products from peanuts including plastics, soap and paint.

8. Why do you think that Charles Annan stole Margaret's design?

Pupils' own responses, such as: I think that he stole Margaret E Knight's design because he saw that it was a good invention and people in those days didn't think women were capable of inventing something so useful.

19th-Century Inventors

Delve into the history files and discover the achievements of three great 19th-century inventors whose creations continue to affect our lives today.

Name: Margaret E Knight

Most Famous Invention: Paper Bags



Born in Maine, USA, on 14th February 1838, Margaret E Knight was nicknamed 'the lady Edison' due to the number of inventions she made around the time that Thomas Edison was inventing. Knight and her family endured many struggles during her childhood and she only received a basic education. She went to work in a cotton mill when she was still a child to help provide for her family.

At the age of 12, she witnessed an accident at the mill. This prompted her to invent a safety device for the **mechanical loom**. Unfortunately, exact details of the contraption have been lost. It is thought to have stopped the loom automatically if something became caught in it.

In 1867, Knight was employed by the Columbia Paper Bag Company. In 1868, she invented a machine that cut and folded paper to form flat-bottomed paper bags. In the 19th century, many people believed that women were less intelligent than men and did not think that Knight could make these inventions. A fellow machinist at the factory named Charles Annan stole her design but she took him to court and won the right to **patent** her design.

Knight founded the Easter Paper Bag Company and continued creating useful inventions for the rest of her life.

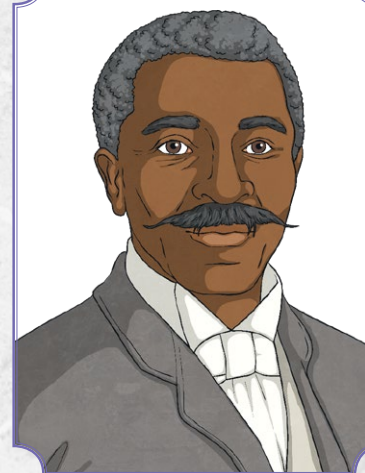


Name: George Washington Carver

Most Famous Inventions: Plant-Based Household Inventions

George Washington Carver was a Black, American teacher, scientist and inventor. He devoted his later life to inventing products using plants, such as peanuts and sweet potatoes, as a way of helping Black farmers whose farmland had become almost useless due to the cotton crops that had grown there.

George Washington Carver was born into enslavement sometime in the early 1860s because his parents were enslaved people. In the 19th century, many Black people were sold into enslavement. They were not treated as equals and they were often prevented from receiving an education. In 1865, enslavement ended and Washington Carver's enslaver, Moses Carver, raised him and his brother as if they were his own sons. Carver and his wife gave them an education and Washington Carver was particularly interested in science and the arts. Later, he became a botanist (an expert in the scientific study of plants) after attending Iowa State University.



In 1896, Washington Carver became a teacher at Tuskegee University where he taught for 47 years. During this time, he also taught farmers how planting crops such as peanuts, soybeans and sweet potatoes could help the soil become higher in nutrients. He did this by using a mobile classroom called the Jesup Agricultural Wagon, which enabled him to travel to farmers to teach them how to grow these crops. Many farmers began planting, growing and harvesting peanut and sweet potato plants but they found them hard to sell. As a result of this, Washington Carver began to invent and develop many products using these crops. He invented more than 300 products from peanuts, including paints, oils and soaps and 118 from sweet potatoes, including postage-stamp glue, flour, vinegar and synthetic rubber. He even invented plant-based petrol.

Name: William Henry Fox Talbot

Most Famous Invention: Light Sensitive Paper



William Henry Fox Talbot was born on 11th February 1800 in Melbury, Dorset, and went on to become a Member of Parliament (MP), inventor and a pioneer of photography.

After receiving his early education at home with a governess, he went to Harrow School for Boys and then to Cambridge University in 1817.

In 1832, he married Constance Mundy and was elected as the MP for Chippenham later in the same year. In 1833, he visited Lake Como in Italy. He was struck by the natural beauty around him and wanted to record it but his sketching skills were limited; he dreamed up a machine which would automatically make the sketch for him.

He was interested in studying light and chemicals and used this knowledge to go on to invent his 'art of photogenic drawing', which used light-sensitive paper. He went on to further develop photography with the use of chemicals that 'fixed' the image onto the paper.

Glossary

mechanical loom: A machine for making fabric by weaving yarn or thread.

patent: A licence obtained from the government that stops others from making, using or selling an invention without the permission of the inventor.

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Questions

1. How old was Margaret E Knight when she witnessed an accident at the mill? Tick one.

- ☐ 11
☐ 12
☐ 13
☐ 14

2. Number the following statements from 1-5 to show the order they happened in William Henry Fox Talbot's life.

- ☐ William Henry Fox Talbot married Constance Mundy.
☐ William Henry Fox Talbot invented light-sensitive paper.
☐ William Henry Fox Talbot became an MP.
☐ William Henry Fox Talbot visited Lake Como.
☐ William Henry Fox Talbot dreamed up a machine that could sketch for him.

3. Name **two** of the jobs that William Henry Fox Talbot did.

- _____
- _____

4. Fill in the missing words from this sentence:

As a result of this, Washington Carver began to _____ and develop many _____ using these crops.

5. Find and copy a phrase from the text that shows that George Washington Carver's exact birthdate is not known.

6. Summarise William Henry Fox Talbot's first invention and his reasons for making it in 30 words or fewer.

7. Why do you think that Charles Annan stole Margaret E Knight's design?

8. Why do you think that George Washington Carver became a botanist?

9. Describe an invention that you would like to make.

Answers

1. How old was Margaret E Knight when she witnessed an accident at the mill? Tick one.

- ☐ 11
☒ 12
☐ 13
☐ 14

2. Number the following statements from 1-5 to show the order they happened in William Henry Fox Talbot's life.

- 1** William Henry Fox Talbot married Constance Mundy.
5 William Henry Fox Talbot invented light-sensitive paper.
2 William Henry Fox Talbot became an MP.
3 William Henry Fox Talbot visited Lake Como.
4 William Henry Fox Talbot dreamed up a machine that could sketch for him.

3. Name **two** of the jobs that William Henry Fox Talbot did.

Accept any two of the following: Member of Parliament (MP); inventor; pioneer of photography.

4. Fill in the missing words from this sentence:

As a result of this, Washington Carver began to **invent** and develop many **products** using these crops.

5. Find and copy a phrase from the text that shows that George Washington Carver's exact birthdate is not known.

sometime in the early 1860s

6. Summarise William Henry Fox Talbot's first invention, and his reasons for making it, in 30 words or fewer.

Pupils' own responses, such as: Because his sketching skills were limited, William Henry Fox Talbot's dreamed up a machine to sketch for him. Due to his interest in light and chemicals, he went on to invent light-sensitive paper.

7. Why do you think that Charles Annan stole Margaret E Knight's design?

Pupils' own responses, such as: Charles Annan saw the value in Margaret E Knight's design and wanted to take the credit for her invention. He believed he would get away with it because in those days no one would believe a woman could have invented such a useful device.

8. Why do you think that George Washington Carver became a botanist?

Pupils' own responses, such as: As a child, George Washington Carver was interested in both science and the arts and by becoming a botanist, he was able to combine his two passions: studying plants and then recording his findings.

9. Describe an invention that you would like to make.

Pupils' own responses, such as: I would like to make an invention that would make my bed for me. It is a job I don't like doing and would save me time before school!

19th-Century Inventors

Name: Margaret E Knight

Most Famous Invention: Paper Bags



Born in Maine, USA, on 14th February 1838, Margaret E Knight was nicknamed 'the lady Edison' due to the number of inventions she was responsible for around the time that Thomas Edison was inventing. Owing to some difficult circumstances during her childhood, Knight received only a basic education. In order to contribute to supporting her family, she began working in a cotton mill when she was still a child.

At the age of 12, she witnessed a serious accident at the mill, prompting her to invent a safety device for the mechanical loom. It is thought that the device stopped the loom automatically if something got caught in it.

Her invention became popular and was used in many other factories. However, Knight was not credited for her work because, at the time, she was unaware of the process for acquiring a patent. A patent is a licence obtained from the government that prohibits others from making, using or selling an invention without the permission of the inventor.

In 1867, Knight was employed by the Columbia Paper Bag Company; in 1868, she invented a machine that cut and folded paper to form flat-bottomed paper bags. This device meant this job no longer needed to be done by hand. Charles Annan, a fellow machinist, stole her design and claimed it as his own, asserting that a woman could not have invented something so useful – a belief held by many people in the 19th century.

Knight took him to court and won the right to patent her design when she proved that she had written detailed notes about her invention.



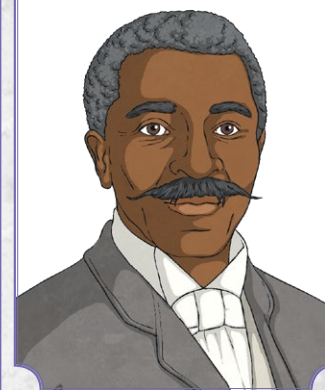
Name: George Washington Carver

Most Famous Inventions: Plant-Based Household

George Washington Carver was a Black, American teacher, who went on to become one of the most prominent scientists and inventors of his time. He devoted his later life to research projects and inventions aimed at helping Black farmers in agricultural areas, where the land had become almost useless due to the cotton crops that had grown there.

George Washington Carver was born into enslavement sometime in the early 1860s because his parents were enslaved people. In 1865, enslavement was abolished in America by the 13th Amendment to the Constitution.

Washington Carver's enslaver, Moses Carver, raised him and his brother as if they were his own sons. Carver and his wife gave them an education which was unusual at the time as enslaved people were not entitled to an education. Washington Carver was particularly interested in science and the arts, especially drawing plants. Later, he became a botanist (an expert in the scientific study of plants) after attending Iowa State University.



In 1896, Washington Carver became a teacher at Tuskegee University where he taught for 47 years. During this time, he demonstrated how planting nutrient-rich plants, such as peanuts, soybeans and sweet potatoes could help the soil become more fertile. He did this by using a mobile classroom called the Jesup Agricultural Wagon, which enabled him to travel to farmers to teach them how to grow these crops. Many farmers began planting, growing and harvesting peanut and sweet potato plants but there was not a lot of demand for them. In response to this, Washington Carver began to invent and develop many products using these crops. He invented more than 300 products from peanuts, including paints, dyes, cosmetics, oils, soap and ink and 118 from sweet potatoes, including postage-stamp glue, flour, vinegar and synthetic rubber. He even invented plant-based petrol, something that is being investigated more nowadays (now called biofuels).

Name: William Henry Fox Talbot

Most Famous Invention: Light Sensitive Paper



William Henry Fox Talbot was born on 11th February 1800 in Melbury, Dorset. He went on to become a Member of Parliament (MP), scientist, inventor, mathematician, archaeologist and a pioneer of photography. After receiving his early education at home, Fox Talbot went to Harrow School and then to Cambridge University in 1817, publishing many articles on mathematics, astronomy and physics.

In 1832, he married Constance Mundy and was elected as the MP for Chippenham in the same year. The following year, he visited Lake Como in Italy where he was keen to record the beauty around him; his sketching skills were limited, prompting him to dream up a machine which would automatically make a sketch for him.

Fox Talbot was interested in studying light and chemicals so he used this knowledge to go on to invent his 'art of photogenic drawing', which used light-sensitive paper to record real images. The downside of this technique was that it took a very long time for an image to be recorded so he went on to further develop photography with the use of chemicals that 'fixed' the image onto the paper.

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Questions

1. Who stole Margaret E Knight's design? Tick one.
 - ☐ George Washington Carver
 - ☐ William Henry Fox Talbot
 - ☐ Charles Annan
 - ☐ Hannah Teal
2. Find and copy one word from the section of the text about **George Washington Carver** which means 'a list of rules'.

3. What does patent mean?

4. Find **two** things that George Washington Carver was interested in as a child.
 - _____
 - _____
5. What was the problem with William Henry Fox Talbot's **art of photogenic drawing**?

6. Why is George Washington Carver's plant-based petrol so interesting to scientists now?

7. Summarise one of Margaret E Knight's inventions in 40 words or fewer.

8. Why do you think that George Washington Carver became a botanist?

9. Why do you think that George Washington Carver became a teacher? Explain your answer.

10. What impression do you get about the way women were treated during the 1830s from the text about Margaret E Knight?

Answers

1. Who stole Margaret E Knight's design? Tick one.
 - ☐ George Washington Carver
 - ☐ William Henry Fox Talbot
 - ☒ **Charles Annan**
 - ☐ Hannah Teal
2. Find and copy one word from the section of the text about **George Washington Carver** which means 'a list of rules'.
Constitution
3. What does patent mean?
Patent means a government licence that excludes others from making, using or selling an invention without the permission of the inventor.
4. Find **two** things that George Washington Carver was interested in as a child.
 - **science**
 - **the arts (drawing plants)**
5. What was the problem with William Henry Fox Talbot's **art of photogenic drawing**?
The problem with William Henry Fox Talbot's 'art of photogenic drawing' was that it took a very long time for an image to be recorded.
6. Why is George Washington Carver's plant-based petrol so interesting to scientists now?
Pupils' own responses, such as: As we try to move away from using fossil fuels, such as oil and coal, scientists are investigating the use of plant-based fuels (biofuels) more.
7. Summarise one of Margaret E Knight's inventions in 40 words or fewer.
Pupils' own responses, such as: After witnessing an accident in the mill, she designed a safety device for the loom to stop if something got caught in it. The invention was used in other factories; she received no recognition due to not obtaining a patent.
8. Why do you think that George Washington Carver became a botanist?
Pupils' own responses, such as: I think that he became a botanist because as a child, he was interested in both science and the arts and by becoming a botanist, he was able to combine his two passions: studying plants and then recording his findings.

9. Why do you think that George Washington Carver became a teacher? Explain your answer.

Pupils' own responses, such as: When George Washington Carver was a child, he was not entitled to an education (due to being the son of enslaved parents) but, because enslavement was abolished and he was looked after by the Carvers, he was educated and probably wanted to provide an education for others because of his gratitude.

10. What impression do you get about the way women were treated during the 1830s from the text about Margaret E Knight?

Pupils' own responses, such as: The text about Margaret E Knight gives me the impression that women were not treated fairly or equally during the 1830s. People did not believe that women were capable of inventing the ingenious creations that she devised. Women were often not educated and people believed they were less intelligent than men.