

Jeffersons Inventions

Reading Level: Middle School

Thomas Jefferson designed and adapted many things. But only three true inventions — moldboard of least resistance, the cipher wheel, and the spherical sundial — can possibly be credited to him, and only the first of these is certain.

Moldboard of Least Resistance

Jefferson was constantly thinking of ways to improve farming. He invented a new type of moldboard for a plow. The moldboard is the curved part that turns over the soil, which the front end of the plow digs up. Jefferson said that his moldboard was “so light that two small horses or mules draw it with less labor than I have even before seen necessary. It does beautiful work and is approved by everyone.” France’s Society of Agriculture awarded him a gold medal for the design.



A recreation of a plow using Jefferson’s *Moldboard of Least Resistance*.



A recreation of the Wheel Cipher Jefferson described in an undated manuscript.

Wheel Cipher

During the American Revolution, codes were a secure way to send secret messages. While Jefferson was Secretary of State, he wrote instructions for making a cipher wheel, but did not make it known. Jefferson's wheel cipher was made up of 26 wooden disks joined by an iron pin. All the letters of the alphabet were imprinted on the edge of each disk in no special order. The letters spun around the iron pin. Words could be scrambled and unscrambled. Whoever received a coded message also had a cipher wheel to help decode the secret message.

Jefferson’s instructions for making the wheel cipher are the earliest known description of the device. Many historians believe he invented it, but they cannot say so for certain. Similar devices are still in active use and may have been used even before the American Civil War.

Spherical Sundial

Jefferson wasn't the first person to design a spherical sundial. But like most people then, he didn't know it had already been invented. As far as we know, he thought up the idea on his own. About his sundial he wrote, "my dial captivates every body foreign as well as home-bred, as a handsome object & accurate measurer of time."

Jefferson created his sundial from the top part of a column. He placed a globe-shaped ball on top. He marked the North Pole, South Pole, the equator and the meridian lines. A movable meridian cast a shadow telling the time.

Throughout his life, Thomas Jefferson dreamed, designed, drafted, adapted and invented. With the help of free and enslaved craftsmen and workers, many of his ideas became reality. Fortunately, Monticello and all the gadgets within it have been preserved as testimony to his genius.



A recreation of Jefferson's Spherical Sundial based on his specifications