

## **What were the Four Great Inventions and some other notable inventions or discoveries?**

Ancient Chinese scientists and engineers made considerable innovations, findings, and technological advances throughout Ancient China's history. Some of these advances include; geology, engineering, medicine, navy technology, herbal sciences, mathematics and astronomy. **(History of science and technology in China. 2020.)**

China held the world's most prominent status throughout the exploration of technology, from the first century BC to the fifteenth century BC, with the four major advancements possessing the greatest global importance and significance. These were; the compass, gunpowder, printing, and papermaking. This was all in addition to the many technology advances too! We owe thanks to China for many novations, findings, and technological advances.

### **The Four Great Inventions:**

The Four Great Inventions are inventions from Ancient China that are revered for their historical importance in Chinese history. The four major inventions are; the compass, gunpowder, printing, and the making of paper. These four inventions had a major influence on the worldwide growth of civilizations.

### **The Compass**

In particular, during the Warring States period of history, the Si Nan device had become the predecessor of the compass. A Si Nan was a ladle-like magnetic device on a plate with a ladle implement aiming to the south. Thin needles composed of magnetized steel were manufactured in the eleventh century. Consequently, the compass was founded.

**(www.travelchinaguide.com, 2020)** The principal objective of the compass was geomancy to assess the right location for events such as burial sites. In Chinese civilizations it is a custom to place intense emphasis upon respect for the dead, this concept then continues to be an important instrument across the nineteenth century. The compass significantly improved the ship's ability to maneuver great distances. **(Wikipedia Contributors, 2018)**



Additionally, a lodestone compass was used in China during the Han Dynasty which was in the 2nd century B.C. as well as the 1st century B.C., where it was named the "south-governor". This was not used for navigation, but instead for geometry and fortune-telling. The first reference to the magnetic system used

only for navigation is referenced in a Song Dynasty Book dating from 1040-1044, where a mention of the iron "south-pointing fish" floating is given. The Compass is described as a way of orientation "in the obscurity of the night." Shen Kuo in his book of 1088 wrote about the first suspended magnetic needle compass. **(FMPRC (2004/10/18) Four Great Inventions of Ancient China)**

There is a legend how the first Chin emperor used a sacred board as well as a compass in court to claim his legitimacy towards the throne. The compass has been used for mathematics for a long time already when it was used for navigating. **(Wikipedia Contributors, 2018)**

### **Gunpowder**

The credit for the discovery of gunpowder is one that belongs to Ancient China. The existence of gunpowder was rather unintentional, in contrast to the invention and creation of paper and printing. Historical necromancers determined in their exercise of alchemy, that an explosion can be caused if equal types of ores and gas were mixed inside the proper proportions and heated, consequently this led to the discovery of gunpowder. **(FMPRC (2004/10/18) Four Great Inventions of Ancient China)**



This was a combination containing sulphur, saltpetre, and charcoal. Towards the conclusion of the tang dynasty, gunpowder has been introduced into the military as a weapon.

This marvelous invention of gunpowder and how it was made was next introduced to the Arab civilization in the twelve century and next onto Europe in the fourteenth century. At first, Gunpowder was used for making fireworks and its later model revolutionized war internationally.

In addition to this gunpowder had other purposes and led to other inventions, due to the fact regular wars fueled these developments; In the Tang dynasty, flying fire arrows, in the Song dynasty there have been grenades and within the Yuan dynasty there were bronze cannons introduced. All these extra inventions were enabled as a result of the accidental creation of gunpowder. **(FMPRC (2004/10/18) Four Great Inventions of Ancient China)**

### **Printing Technique**

Printing is another invention that we owe to China. Earlier than the discovery and invention of printing, distribution of expertise and knowledge depended both on the phrase of mouth or handwritten copies of manuscripts and other texts.

Each took a long time and were liable to blunders and mistakes. This continued in the Sui Dynasty to the practice of engraving writing, drawings, and notes on a timber board, smearing the board with ink, and then printing on pieces of paper page-by-page. This has become referred to as block printing. In the Tang Dynasty, this technique was steadily brought to Vietnam, Japan, Korea and the Philippines, yet block printing had its drawbacks, as a single mistake could ruin an entire board.

During the reign of Emperor Ren Zong of the Northern Song Dynasty, In 1041-1048 of the Song Dynasty, a man named Bi Sheng carved individual characters on pieces of fine clay which he hardened, this then resulted in pieces of movable type. Bi Sheng invented a moveable, reusable clay type after numerous tests. Single types were made and picked out for printing certain books. These types could be used again and again for different books. Because of the large number of different characters in the Chinese written language, this technique did not have a dramatic impact at the time. However, today, this typesetting technique is regarded as a revolution in the industry. About 200 years later, this moveable-type technique spread to other countries and advanced the development of world civilization. **(FMPRC (2004/10/18) Four Great Inventions of Ancient China)**



## **Paper**

China was the first country to invent paper. Before its invention, words were written on numerous natural materials. It was then discovered by using the method of silk reeling, the people in Ancient China succeeded in first creating a kind of paper referred to as "bo" out of silk. However, its manufacturing became very costly because of the shortage of materials. In the early days of the second century, a eunuch named Cai Lun made significant innovation and helped create a new type of paper.

His advanced paper-making technology then spread to central Asia and the world through the Silk Road. Cai Lun produced a brand new kind of paper from bark, rags, wheat stalks, and different materials. It was especially cheap, light, skinny, long-lasting, and extra appropriate for brush writing. At the beginning of the 3rd century, the papermaking process first spread to Korea and then to Japan. It reached the Arab global in the Tang Dynasty, and Europe inside the 12th century. In the 16th century, it went to the United States of America passing through and by Europe, then it expanded to be used everywhere in the world. Before paper was invented, Qin Shihuang, the first emperor in the Chinese historical records, needed to read and



discuss over a hundred and twenty kilos of professional files written on bamboo or wooden strips. **(FMPRC (2004/10/18) Four Great Inventions of Ancient China)**

### **Fireworks**

Gunpowder later began to be used to make special effects during performances for non-military purposes, especially among acrobats and magicians. This gradually became the dynamic displays of fireworks which China is still recognized for today and which have expanded globally. **(Brainscape (2015) 6 Monumental Chinese Inventions.)**

### **Silk**

In addition to the 4 Great Inventions, silk was also something that was invented and produced for the first time in Ancient China. **(DUCKSTERS EDUCATION. (2020) Ancient China for Kids: Inventions and Technology)** In 1035 the Chinese invented the spinning wheel to meet the growing demands for silk. This basic device was easily used and was able to be used by just one person and consequently produced high-quality export thread and fabric.

### **Boat Rudder**

Additionally, in addition to the 4 terrific inventions, the boat rudder became invented as a way to steer, navigate, and direct big ships. This enabled the Chinese naval engineers to build huge ships as early as two hundred A.D, this was a lot earlier than they have been ever constructed in Europe and the rest of the world! **(DUCKSTERS EDUCATION. (2020) Ancient China for Kids: Inventions and Technology)**

### **Other Inventions:**

Other Inventions and creations include; the umbrella, porcelain, the wheelbarrow, iron casting, hot air balloons, seismographs to measure earthquakes, kites, matches, stirrups for riding horses, and acupuncture. **(DUCKSTERS EDUCATION. (2020) Ancient China for Kids: Inventions and Technology)**

### **Porcelain**

Modern porcelain was produced in the 16th century BC. Modern china from the high thermal firing process did not appear until the Ming Dynasty with painted glaze designs. As an elegant and versatile alternative to traditional pottery and glassware, porcelain became increasingly popular and the demand for it grew

rapidly. Rich families throughout Europe and the rest of the western world were also asking and demanding for it, however the technology and methods of how to make the porcelain eventually spread to Europe. **(Brainscape (2015) 6 Monumental Chinese Inventions.)**

### **Sails and Kites.**

The Chinese kites were created 2000 years before the European invention of the sails. In addition, these kites were used as essential military communication systems. The sails made it easier for ships to first sail in the wind. Sailors around the world were emulating China's technologies and gradually these kinds of sails became common on ships. **(Brainscape (2015) 6 Monumental Chinese Inventions.)**

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