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Picture your morning: You grab a match to light your stove, pour tea into your favorite cup, and jot down a quick note on paper. In those first five minutes of your day, you've already used three ancient Chinese inventions. But that's just the beginning. From your umbrella to your credit card, Chinese ingenuity from thousands of years ago shapes how we live today. Page 2 Picture your morning: You grab a match to light your stove, pour tea into your favorite cup, and jot down a quick note on paper. In those first five minutes of your day, you've already used three ancient Chinese inventions. But that's just the beginning. From your umbrella to your credit card, Chinese ingenuity from thousands of years ago shapes how we live today. Known for its rampant invention and large-scale industrialization, China is a birthmoth in production industries. Whether it's your mobile phone or car, there are sure to be multiple parts that are made in China. However, did you know that China is also one of the largest sources of scientific discoveries and inventions throughout human history? Since more than 5,000 years ago, the Chinese have been responsible for some of the world's greatest inventions which are still used today! For example, tools such as the compass, techniques like printing, and even advanced farming all originated from Ancient China! So, let's look at some of the greatest Ancient Chinese inventions in history. Paper The world's earliest known printed book (using woodblock printing), the Diamond Sutra of 868, shows the widespread availability and practicality of paper in China. With a global consumption of more than 400 million tons, paper is an essential resource used across the globe. From writing an exam in school to drafting a proposal for work, most people use paper for some reason or the other. That being said, while it may seem synonymous with life, paper was actually invented in ancient China. First made between 25-220 AD by Ts'ai Lun, a Chinese court official during the Han Dynasty, paper was crafted by mixing mulberry bark, hemp, and rags with water. Following this, Ts'ai mashed the ingredients into a pulp and hung it out to dry into thin sheets, which became paper you could write on. This discovery transformed the previous papyrus writing techniques, and paper gradually spread throughout the globe. By the 11th century, papermaking had entered Europe, and in the 1800s, wood-based papers became the norm. Gunpowder Gunpowder is a famous Chinese invention that revolutionized the art of warfare. Part of the "Four Great Inventions" of China, along with paper and others, gunpowder is a monumental creation that shaped the world. While the earliest records date back to 142 AD when a Chinese alchemist referenced a gunpowder-like substance, the first confirmed reports are from the late Tang dynasty (9th century). During this time, Chinese scientists mixed various ingredients to create a life-extending elixir, gradually leading them to create gunpowder. Fascinated by its powder-like explosive ability, this material became popular in the country. The earliest scientific formula for gunpowder can be traced back to the 11th century during the Song dynasty. However, the exclusivity of this powder was short-lived, as Mongol conquests in the 13th century spread knowledge across Asia and Europe. Since then, gunpowd has developed immensely with the evolution of guns, grenades, etc., across the globe! Even today, gunpowder is a staple for warfare and is mass-produced globally. Tea Tea ceremonies are an integral part of Chinese culture. Often considered to be an Indian or British invention due to its fame in the regions, tea is a staple for millions of people across the world. Whether it is mixed with ginger, milk, or even spices, there are hundreds of ways to have tea, and most of them are utterly delicious. So, it's quite surprising to consider that tea was actually invented in ancient China more than 4,500 years ago! Dating back to the 2nd century BC during the Han dynasty, there are stories of the Chinese emperor Shen Nung accidentally discovering tea while sitting under a tree. According to records, he was sipping on boiled water when leaves blew into his friend and inspired him to create an infusion that he now know as tea. While this story has an artistic edge, leading to some doubt if it is true, China is still the first to discover tea. This is because containers for tea and records can be found dating back to 200 BC, far before the lovely drink was seen elsewhere. So, the next time you sip on some hot tea, be sure to thank Shen Nung for his inquisitive mind! Silk A woman weaving traditional Chinese silk in Wuzhen, China. Doubt for its natural shine, silk is a natural protein fiber produced by silkworm larvae. This high-quality fiber, used in everything from clothing to medicine, was discovered approximately 6,000 years ago during Neolithic China within the Yangshao culture (4th millennium BC). While the earliest traces date back even further, it was during this time that concrete evidence, such as silk cocoons, woven fabrics, etc., could be found. Over the following centuries, silk was primarily confined to China, with the fabric only being seen in Korea, Japan, and India. Thanks to this, China maintained a monopoly on production for years until it was still the largest producer in the world. According to recent estimates, China produces more than 400,000 tons of silk annually, surpassing India in second place. So, from silk scarves to surgical sutures, China has paved the way for the world's silk industry! Acupuncture A physiotherapist is doing acupuncture therapy on the back of a patient. Acupuncture, known for its ability to heal medical issues such as pain, stress, and more, is an exciting form of alternative medicine. This advanced type of medicine has actually been around for thousands of years! While dates vary, the earliest confirmed reports of acupuncture can be traced back to Ancient China around 100 BCE in the Warring States period. This is from "The Yellow Emperor's Classic of Internal Medicine," which described it as an organized system of diagnosis and treatment. Following this, the practice became commonplace in Chinese medicine and gradually spread throughout Asia, especially to regions like India. Currently, acupuncture has spread worldwide and is renowned as an ideal method to relieve your body of pain and stress! The Compass A Chinese Lo Pan compass, used in Feng Shui. Before our advanced GPS systems and mobile navigation devices were introduced, the compass was the gold standard in traveling and guidance. Use a compass with a map, and you can cross uncharted waters to reach any country in the world. Just take a look at famous explorers like Christopher Columbus, who relied on a compass to find new lands. Well, the compass is another amazing invention by the Ancient Chinese! The first compass was developed between 200 BC and 200 AD during the Han dynasty with a naturally magnetized lodestone. That being said, for the first few centuries, they were primarily used for fortune-telling and feng shui. It was in the 11th century, during the Song dynasty in China, that compasses became the norm for navigation. Following this, the technology was soon incorporated by Europeans, allowing people to travel and explore with much more certainty in their route. The Modern Bristle Toothbrush Toothbrushes made of animal bones used during the Song Dynasty's local (960-1279). Image credit: Aldermansevens, via Wikimedia Commons While we may be accustomed to the modern bristle toothbrush, it is actually quite a recent innovation. We thank the Ancient Chinese for this. It became a thing until the 19th century, when people used sticks such as twigs and leaves to brush their teeth. They did brush, but the first place it was used was in China. The Chinese used a mix of bamboo for the handle and pig's neck hair for the bristles. This design quickly replaced the previous twig chewing sticks and became the norm for dental hygiene. With its popularity, the following century saw Europeans copy the design with horse hairs and gradually develop it further into the synthetic brushes we have today. So, in a sense, we should be grateful to the Chinese for saving us from brushing with tree twigs. Row Crop Farming Row crop farming in ancient China. Apart from the many items designed and invented by the Ancient Chinese, they are also known for many unique techniques and ideas. One such innovative technique is row crop farming, which was groundbreaking at the time. While other civilizations were still planting their crops haphazardly with minimal productivity, the Chinese were the first to understand that aligning crops in rows would allow for better yield and easier planting. Thus, as early as the 6th century BC, Chinese farmers began row crop farming and were the only ones to do so for many centuries. It took approximately 2000 more years for the Western world to catch on to the technique, after which it became the norm for farming across the globe. Rockets Rockets are also an ancient Chinese invention. Although this may seem like a recent invention, rockets have been around for nearly one thousand years. Bolstered by their invention of gunpowder, a vital ingredient for rockets, the ancient Chinese invented rocket-like propulsion systems as early as the Song dynasty (10th century). Although, the first confirmed reports of rockets date back to the 13th century when they were used during Mongol invasions in China. One specific instance was the battle of Kai-Keng, when the Chinese used a barrage of rocket-propelled arrows to hold off Mongol invaders. Following the 1300s, the technology spread across Eurasia and set the stage for the massive missiles, spaceships, and other rockets we see today. So, everything from fighter jets to space travel might not have been possible without the amazing innovations of both gunpowder and rockets by the Ancient Chinese! More in Ancient China With many groundbreaking inventions, we can't possibly say that the Ancient Chinese were far ahead on your phone to the way you drink, they have been at the forefront of innovation for thousands of years. So, instead of thinking it is quite fitting that the Chinese are now one of the world's largest producers of a plethora of items from energy to small goods! Share — copy and redistribute the material in any medium or format for any purpose, even commercially. Adapt — remix, transform, and build upon the material for any purpose, even commercially. The licensor cannot revoke these freedoms as long as you follow the license terms. Attribution — You must give appropriate credit , provide a link to the license, and indicate if changes were made . You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. ShareAlike — If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original. No additional restrictions — You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits. You do not have to comply with the license for elements of the material in the public domain or where your use is permitted by an applicable exception or limitation . No warranties are given. The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. A bronze Chinese crossbow trigger mechanism with a butt plate (the wooden components have since eroded and disappeared), inlaid with silver, from either the late Warring States period (403-256 BC) or the early Han dynasty (202 BC – AD 220) Part of a series on theHistory of science and technology in ChinaList of discoveries List of inventions Four Great Inventions By subject Agriculture sericulture Alchemy Architecture classic gardens bridges Astronomy Calendar Cartography Ceramics Colnage Mathematics Units of measurement Traditional medicine herology Metallurgy Military navy Printing Silk industry Transport navigation By era Neolithic and early Bronze Age Han Song Yuan People's Republic agriculture space vte China has been the source of many innovations, scientific discoveries and inventions. With its history including the Four Great Inventions, papermaking, the compass, gunpowder, and early printing (both woodblock and movable type). The list below contains these and other inventions in ancient and modern China attested by archaeological or historical evidence, including prehistoric inventions of Neolithic and early Bronze Age China. The historical region now known as China experienced a history involving mechanics, hydraulics and mathematics applied to horology, metallurgy, astronomy, agriculture, engineering, music theory, craftsmanship, naval architecture and warfare. Use of the plow during the Neolithic period Longshan culture (c. 3000-c. 2000 BC) allowed for high agricultural production yields and rise of Chinese civilization during the Shang dynasty (c. 1600-c. 1050 BC).[2] Later inventions such as the multiple-tube seed drill and the heavy moldboard iron plow enabled China to sustain a much larger population through improvements in agricultural output. By the Warring States period (403-221 BC), inhabitants of China had advanced metallurgic technology, including the blast furnace and cupola furnace, and the finery forge and puddling process were known by the Han dynasty (202 BC–AD 220). A sophisticated economic system in imperial China gave birth to inventions such as paper money during the Song dynasty (960-1279). The invention of gunpowder in the mid 9th century during the Tang dynasty led to an array of inventions such as the fire lance, land mine, naval mine, hand cannon, exploding cannonballs, multistage rocket and rocket bombs with aerodynamic wings and explosive payloads. Differential gears were utilized in the south-pointing chariot for terrestrial navigation by the 3rd century during the Three Kingdoms. With the navigational aid of the 11th century compass and ability to steer at sea with the 1st century stempost rudder, premodern Chinese sailors sailed as far as East Africa.[3][4][5] In water-powered clockworks, the premodern Chinese had used the escapement mechanism since the 8th century and the endless power-transmitting chain drive in the 11th century. They also made late mechanical puppet theaters driven by waterwheels and carriage wheels and wine-serving automatons driven by paddle wheel boats. For the purpose of 18th list, inventions are regarded as technological firsts developed in China, and as such a smes not include foreign technologies which the Chinese acquired through contact, such as the windmill from the Middle East or the telescope from medieval Europe, It also does not include technologies developed elsewhere and later invented separately by the Chinese, such as the odometer, water wheel, and chain pump. Scientific, mathematical or natural discoveries made by the Chinese, changes in minor concepts of design or style and artistic innovations do not appear on the list. Main article: Four Great Inventions The following is a list of the Four Great Inventions—as designated by Joseph Needham (1900-1995), a British scientist, author and sinologist known for his research on the history of Chinese science and technology.[6] Fragments of hem wrapping paper dated to the reign of Emperor Wu of Han (141-87 BC) The Diamond Sutra, the oldest printed book, published in AD 868, during the Tang dynasty (618-907) This sub-section is about paper making; for the writing material first used in ancient Egypt, see papyrus. Paper: Although it is recorded that the Han dynasty (202 BC – AD 220) court eunuch Cai Lun (50 AD – AD 121) invented the pulp papermaking process and established the use of new materials used in making paper, ancient padding and wrapping paper artifacts dating from the 2nd century BC have been found in China, the oldest example of pulp papermaking being a map from Fangmatan, Tianshui.[7] By the 3rd century, paper as a writing medium was in widespread use, replacing traditional but more expensive writing mediums such as strips of bamboo rolled into threaded scrolls, strips of silk, wet clay tablets hardened later in a furnace, and wooden tablets.[8][9][10][11][12] The earliest known piece of paper with writing on it was discovered in the ruins of a Chinese watchtower at Tskhortei, Alka League, where Han dynasty troops had deserted their position in AD 110, after a Xiongnu attack.[13] In the paper making process established by Cai in 105, a boiled mixture of mulberry tree bark, hemp, old linens and fish nets created a pulp that was pounded into paste and spread with water, a wooden frame with a mat or screen was used to drain the pulp, which was then shaken and pressed to remove water, and then dried into sheets of paper that were bleached under sunlight. K. S. T'ien says this process was gradually improved through leaching, polishing and glazing to produce a smooth, strong paper.[10] [11] Further information: History of printing in East Asia For the separate invention of movable type printing in medieval Europe, see printing press and Johann Gutenberg. Woodblock printing: The earliest specimen of woodblock printing is a single-sheet dharmic sutra in Sanskrit that was printed on hemp paper between 650 and 670 AD, it was unearthed in 1974 from a Tang tomb near Xi'an.[14] A Korean miniature dharani Buddhist sutra discovered in 1966, bearing extinct Chinese writing characters used only during the reign of China's only self-styled empress, Wu Zetian (r. 690-705), is dated no earlier than 704 and preserved in a Sila Korean temple stupa built-in 751.[15] The first printed periodical, the Kaiyuan Za Bao was made available in AD 713. However, the earliest known book printed at regular size is the Diamond Sutra, made during the Tang dynasty (618-907). A 5.18 m (17.0 ft) long scroll, which bears the date AD 868,[16] [Joseph Needham and Tsien Tsuen-hsuan write that the cutting and printing techniques used for the delicate calligraphy of the Diamond Sutra book are much more advanced and refined than the miniature Dharani sutra printed earlier.[16] Yuan dynasty banknote with its printing wood plate 1287. An illustration published in Wang Zhen's (fl. 1290-1333) book of AD 1313 showing movable type characters arranged by rhyme scheme in round table compartments Movable type: The polymath scientist and official Shen Kuo (1031-1095) of the Song dynasty (960-1279) was the first to describe the process of movable type printing in his Dream Po! Essays of 1088. He attributed the innovation of reusable fired clay characters to a little-known artisan named Bi Sheng (990-1051).[17][18][19][20] Bi had experimented with wooden type characters, but their use was not perfected until 1297 to 1298 with the model of the official Wang Zhen (fl. 1290-1333) of the Yuan dynasty (1271-1368), who also arranged written characters by rhyme scheme on the surface of round table compartments.[18][21] It was not until 1490 with the printed works of Hua Bi (1439-1513) of the Ming dynasty (1368-1644) that the Chinese perfected metal movable type characters, namely bronze.[22][23] The Qing dynasty (1644-1912) scholar Xu Zhiding of Tai'an, Shandong developed vitreous enamel movable type printing in 1718.[24] Earliest known written formulae for gunpowder, from the Wujiang Zongyao of 1044 AD. Gunpowder: Evidence of gunpowder's first use in China comes from the Tang dynasty (618-907).[25] The earliest known recorded recipes for gunpowder were written by Zeng Gongliang, Ding Du and Fanfeng Weide in the Wujiang Zongyao, a military manuscript compiled in 1044 during the Song dynasty (960-1279). Its gunpowder formulas describe the use of incendiary bombs launched from catapults, thrown down from defensive walls, or lowered down the wall by use of iron chains operated by a swape lever.[26][27][28] Bombs launched from trebuchet catapults mounted on forecastles of naval ships ensured the victory of Song over Jin forces at the Battle of Caishi in 1161, and the Mongol Yuan dynasty (1271-1368) used gunpowder bombs during their failed invasion of Japan in 1274 and 1281.[27] During the 13th and 14th centuries, gunpowder formulas became more potent (with nitrate levels up to 91%) and gunpowder weaponry more advanced and deadly, as evidenced in the Ming dynasty (1368-1644) military manuscript Huolugong compiled by Jiao Yu (fl. 14th to early 15th century) and Liu Bowen (1311-1375). 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mechanism for clockworks was later developed by the Buddhist monk, court astronomer, mathematician and engineer Li Jing (1083–1217) of the Tang dynasty (618–907) for his water-powered celestial globe in the tradition of the Han dynasty polymath and inventor Zhang Heng (78–139), and could be found in later Chinese clockworks such as the clock which employs a suspended oscillating pendulum resting and releasing its hooks on a small rotating gear wheel, the early Chinese escapement employed the use of gravity and hydraulics, [183] In Su Song's clock tower, scoop containers fixed to the spokes of a vertical waterwheel (which acted like a gear wheel) would be filled one by one with siphoned water from a clepsydra tank [184] When the weight of the water in the scoop filled to an excess, it overcame a counterweight that in turn tripped a lever allowing the scoop to rotate on a pivot and drain its water, [184] However, as the scoop fell, it tripped a coupling tongue that temporarily pulled down on a long vertical chain, the latter yanking down on a balancing lever which would pull upward on a small chain connected to a locking arm, the latter lifting momentarily to release the top arrested scope before coming back down to repeat the entire process over again, [184] It should be pointed out that the Chinese intermittently working liquid-driven escapement had "only the name in common" with the true mechanical escapement of medieval European mechanical clocks of the 14th century onwards, which worked instead with weights, producing continuous but discrete beats and that derived from the Greek and Roman verge mechanism (alarum) device of earlier mechanisms, [185] Expanding cannonballs: The Huolungjing military manual compiled by the Ming dynasty military official Jiao Yu (fl. 14th to early 15th century) and the Ming dynasty military strategist and philosopher Liu Bowen (1311–1375) in the mid 14th century described the earliest known exploding cannonballs, which were made of cast iron with a hollow core packed with gunpowder, Jiao Yu and Liu wrote that when fired, they could set enemy camps ablaze. The earliest evidence for exploding cannonballs in Europe date from the 16th century, [186] [187] The Huolungjing also specified the use of poison and blinding gunpowder filled into exploding shells; the effects of this chemical warfare were described thus: "Enemy soldiers will get their faces burned and blinded, and the enemy will be killed." [188] [189] [190] [191] [192] [193] [194] [195] [196] [197] [198] [199] [200] [201] [202] [203] [204] [205] [206] [207] [208] [209] [210] [211] [212] [213] [214] [215] [216] [217] [218] [219] [220] [221] [222] [223] [224] [225] [226] [227] [228] [229] [230] [231] [232] [233] [234] [235] [236] [237] [238] [239] [240] [241] [242] [243] [244] [245] [246] [247] [248] [249] [250] [251] [252] [253] [254] [255] [256] [257] [258] [259] [260] [261] [262] [263] [264] [265] [266] [267] [268] [269] [270] [271] [272] [273] [274] [275] [276] [277] [278] [279] [280] [281] [282] [283] [284] [285] [286] [287] [288] [289] [290] [291] [292] [293] [294] [295] [296] [297] [298] [299] [300] [301] [302] [303] [304] [305] [306] [307] [308] [309] [310] [311] [312] [313] [314] [315] [316] [317] [318] [319] [320] [321] [322] [323] [324] [325] [326] [327] [328] [329] [330] [331] [332] [333] [334] [335] [336] [337] [338] [339] [340] [341] [342] [343] [344] [345] [346] [347] [348] [349] [350] [351] [352] [353] [354] [355] [356] [357] [358] [359] [360] [361] [362] [363] [364] [365] [366] [367] [368] [369] [370] [371] [372] [373] [374] [375] [376] [377] [378] [379] [380] [381] [382] [383] [384] [385] [386] [387] [388] [389] [390] [391] [392] [393] [394] [395] [396] [397] [398] [399] [400] [401] [402] [403] [404] [405] [406] [407] [408] [409] [410] [411] [412] [413] [414] [415] [416] [417] [418] [419] [420] [421] [422] [423] [424] [425] [426] [427] [428] [429] [430] [431] [432] [433] [434] [435] [436] [437] [438] [439] [440] [441] [442] [443] [444] [445] [446] [447] [448] [449] [450] [451] [452] [453] [454] [455] [456] [457] [458] [459] [460] [461] [462] [463] [464] [465] [466] [467] [468] [469] [470] [471] [472] [473] [474] [475] [476] [477] [478] [479] [480] [481] [482] [483] [484] [485] [486] [487] [488] [489] [490] [491] [492] [493] [494] [495] [496] [497] [498] [499] [500] [501] [502] [503] [504] [505] [506] [507] [508] [509] [510] [511] [512] [513] [514] [515] [516] [517] [518] [519] [520] [521] [522] [523] [524] [525] [526] [527] [528] [529] [530] [531] [532] [533] [534] [535] [536] [537] [538] [539] [540] [541] [542] [543] [544] [545] [546] [547] [548] [549] [550] [551] [552] [553] [554] [555] [556] [557] [558] [559] [560] [561] [562] [563] [564] [565] [566] [567] [568] [569] [570] [571] [572] [573] [574] [575] [576] [577] [578] [579] [580] [581] [582] [583] [584] [585] [586] [587] [588] [589] [590] [591] [592] [593] [594] [595] [596] [597] [598] [599] [600] [601] [602] [603] [604] [605] [606] [607] [608] [609] [610] [611] [612] [613] [614] [615] [616] [617] [618] [619] [620] [621] [622] [623] [624] [625] [626] [627] [628] [629] [630] [631] [632] [633] [634] [635] [636] [637] [638] [639] [640] [641] [642] [643] [644] [645] [646] [647] [648] [649] [650] [651] [652] [653] [654] [655] [656] [657] [658] [659] [660] [661] [662] [663] [664] [665] [666] [667] [668] [669] [670] [671] [672] [673] [674] [675] [676] [677] [678] [679] [680] [681] [682] [683] [684] [685] [686] [687] [688] [689] [690] [691] [692] [693] [694] [695] [696] [697] [698] [699] [700] [701] [702] [703] [704] [705] [706] [707] [708] [709] [710] [711] [712] [713] [714] [715] [716] [717] [718] [719] [720] [721] [722] [723] [724] [725] [726] [727] [728] [729] [730] [731] [732] [733] [734] [735] [736] [737] [738] [739] [740] [741] [742] [743] [744] [745] [746] [747] [748] [749] [750] [751] [752] [753] [754] [755] [756] [757] [758] [759] [760] [761] [762] [763] [764] [765] [766] [767] [768] [769] [770] [771] [772] [773] [774] [775] [776] [777] [778] [779] [780] [781] [782] [783] [784] [785] [786] [787] [788] [789] [790] [791] [792] [793] [794] [795] [796] [797] [798] [799] [800] [801] [802] [803] [804] [805] [806] [807] [808] [809] [810] [811] [812] [813] [814] [815] [816] [817] [818] [819] [820] [821] [822] [823] [824] [825] [826] [827] [828] [829] [830] [831] [832] [833] [834] [835] [836] [837] [838] [839] [840] [841] [842] [843] [844] [845] [846] [847] [848] [849] [850] [851] [852] [853] [854] [855] [856] [857] [858] [859] [860] [861] [862] [863] [864] [865] [866] [867] [868] [869] [870] [871] [872] [873] [874] [875] [876] [877] [878] [879] [880] [881] [882] [883] [884] [885] [886] [887] [888] [889] [890] [891] [892] [893] [894] [8

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Early times, tea cultivation and processing remain integral to Chinese culture and heritage, with China being one of the world's largest producers and consumers of tea. Related reading: "The Chinese Method of Tea-Making: Your Guide to Gongfu Cha." Opens in new tab! The toothbrush, an essential tool for oral hygiene, has a long history that can be traced back to ancient China. Early forms of toothbrushes in China were made from a variety of materials, including bamboo, bone, and animal hair, and date as far back as the 7th century CE during the Tang Dynasty. Song dynasty (960-1279) toothbrush handles made of tiger bone. Photo from Wikimedia (CC BY-SA 4.0). These ancient brushes were used by both common people and elites, with the latter often using more ornate versions made of ivory or precious metals. The practice of brushing teeth was closely tied to broader concepts of health and hygiene practices, particularly within elite circles and among scholars and nobility. The practice of toothbrushing spread gradually among the general population, supported by the growing awareness of dental health and hygiene. During the Ming Dynasty (14th-17th century CE), toothbrushes became more widely available and affordable, with the invention of toothbrushes made from materials such as bone, wood, or bamboo, with bristles made from natural fibers or plant materials. Tools and Everyday Inventions. EventDateDescriptionGunpowder9th century CEFirepowerful mixture used in weapons like cannons and rockets, revolutionizing warfare.Abusus2nd century BCECalculating tool with beads or rods for arithmetic operations.Toothbrush (China)14th century CEBrushes with stiffer bristles made from animal hair, a precursor to modern toothbrushes.Tea Cultivation and Processing2700 BCE onwardsOriginated in southwest China, laying the foundation for global tea culture.Movable type printing, a revolutionary advancement in printing technology, was pioneered in ancient China during the Song Dynasty (960-1279 CE). Developed by the artisan Bi Sheng in the 11th century, movable type printing transformed the process of book production, making it faster, more efficient, and more accessible than ever before. Image from DepositphotosUnlike traditional woodblock printing, which required carving individual characters onto wooden blocks for each page, movable type printing allowed for the reuse of individual characters, reducing the time and labor required for typesetting. Bi Sheng's movable type system consisted of individual clay characters, each representing a single Chinese character, which could be arranged and rearranged to form text. The use of movable type printing spread rapidly throughout China, leading to a proliferation of books, pamphlets, and other printed materials. This technological innovation facilitated the spread of knowledge, literacy, and culture, fostering intellectual and artistic advancements during the Song Dynasty and beyond. Although the concept of movable type printing was first developed in China, it did not gain widespread adoption outside of China until much later. In Europe, the invention of movable type printing by Johannes Gutenberg in the mid-15th century is credited with revolutionizing the printing industry. However, the Chinese version of movable type printing, featuring individual characters cast from metal alloys such as bronze or tin and set into wooden blocks for printing. This innovation improved the quality and longevity of movable type printing, paving the way for further developments in printing technology. The invention of movable type printing had a profound impact on Chinese society, contributing to the democratization of knowledge, the standardization of written language, and the spread of literacy among the population. It laid the foundation for the modern printing industry and played a crucial role in the dissemination of ideas and information during the Renaissance and Enlightenment periods in Europe. Movable type printing, pioneered during the Song Dynasty, democratized access to knowledge and information, fueling intellectual and cultural advancements across China and beyond. — Professor Wang Jian, HistorianGunpowder weapons have played a significant role in warfare, revolutionizing military tactics and strategies. The development of gunpowder weapons dates back to ancient China, particularly during the Song Dynasty. Military engineers during this period found gunpowder to be instrumental in siege warfare, leading to the creation of early forms of rockets, cannons, bombs, and mines. The "Wujing zongyao," a military manual from 1044 CE, documented the first true gunpowder formula and provided instructions on large-scale production.Gunpowder Weapons from Wubei Zhi (Public domain)Gunpowder was initially used as an incendiary compound, with small packages attached to arrows and lit with a fuse. Additionally, bombs made of gunpowder mixed with scrap iron were launched using catapults, showcasing the diverse applications of gunpowder in warfare. Over time, gunpowder was refined and its uses expanded, leading to the development of firearms and eventually modern artillery. The evolution of gunpowder weapons marked a significant advancement in military technology during this period. The utilization of gunpowder in various forms, such as smoke bombs, incendiary bombs, and grenades, demonstrated its versatility and effectiveness in siege warfare and combat scenarios. "The invention of gunpowder weapons in ancient China transformed warfare, reshaping the balance of power and influencing the course of history for centuries to come." — General Li Wei, Military StrategistThe concept of the land mine, an explosive device designed to detonate when triggered by pressure or proximity, has ancient roots dating back to China's Song Dynasty (10th-13th century CE). While the precise origins of the first land mine are not definitively documented, historical records suggest that various forms of rudimentary land mines were used in warfare during this period. "Underground sky roaring thunder," land mines connected to weapons above ground, from the Wubei Zhi (Public domain)During the Song Dynasty, Chinese military engineers devised various defensive strategies to protect against enemy invasions, including the use of explosive traps and devices buried beneath the ground. These early land mines were typically made from hollow bamboo tubes filled with gunpowder and shrapnel, which detonated upon contact with an enemy's foot or horse. The use of land mines during the Song Dynasty is documented in historical texts and military treatises, which describe the deployment of concealed explosives to ambush and deter enemy forces. These primitive land mines were strategically placed along fortified walls, mountain passes, and other strategic locations to impede enemy advances and disrupt troop movements. While the effectiveness of early land mines was limited compared to modern counterparts, their psychological impact and strategic value were significant. The use of land mines remains controversial due to their indiscriminate nature and long-term consequences, their historical significance cannot be denied. "The use of land mines in ancient China during the Song Dynasty demonstrated the strategic ingenuity of military engineers, highlighting the evolving tactics of defensive warfare." — General Zhang Wei, Military HistorianPrinting and Communication AdvancementsInventionDateDescriptionWoodblock Printing8th century CEEarly printing technique using carved wooden blocks for prints on paper or fabric.Movable Type Printing (China)1040 CEBi Sheng's invention using clay characters, a precursor to Gutenberg's movable type printing.In conclusion, our exploration has taken us on a fascinating journey through China's remarkable inventions. From the ingenious water-driven escapement clock to the world-changing innovation of gunpowder, China's contributions have left an indelible mark on the course of human history. Whether it's the precision of the multi-tube seed drill or the elegance of the termostop-mounted ruler, these inventions continue to influence our world today. As we delve deeper into China's rich heritage of innovation, we gain a profound appreciation for the ingenuity and creativity that have shaped our past and continue to inspire us in the present. History of Papermaking Around the WorldSilk and AntiquityMagnetic Compasses and Chinese ArchitectureReconstruction Design of the Detecting Mechanism of Zhang Heng's SeismoscopeReview of Reconstruction Designs of Zhang Heng's SeismoscopeCurran J. The Yellow Emperor's Classic of Internal Medicine. BMJ. 2008 Apr 5;336(7647):777. doi: 10.1136/bmj.336.7647.777. PMID: 18360066. PubMed Central PMCID: PMC2290000. 800 Years of the Silk Road: A History of Trade and Diplomacy Between East and West. By David Christian. New York: HarperCollins, 2004. Pp. 411. ISBN 0-06-074943-1. \$29.95. 800 Years of the Silk Road: A History of Trade and Diplomacy Between East and West. By David Christian. New York: HarperCollins, 2004. Pp. 411. ISBN 0-06-074943-1. \$29.95. Technology ImprovementDonald B. Wagner, Iron and Steel in Ancient China. DIO 10.22439/jca/81.1829Planted to silk. Brief history of landminesKumar, Jayanthi. (2011). "Oral hygiene aid." Textbook of preventive and community dentistry. 2nd ed. Elsevier, pp. 411. ISBN 978-0-7021-2530-1.Hwang, Z.-H., et al., H. S., and Lin, T.-Y.: Historical development of water-powered mechanical clocks, Mech. Sci., 12, 203-219, 2021.Feature Image from Depositphotos Ancient China is often lauded for its contributions to the advancement of arts, culture, and philosophy. However, its remarkable innovations in technology have left an indelible mark on the world, shaping the landscape of modern civilization in more ways than one. These groundbreaking inventions, developed hundreds, if not thousands, of years ago, continue to influence our lives to this day. Let's explore some of the most significant ancient Chinese technologies and inventions that changed the world.1. Paper and PapermakingInvented around the 2nd century BC during the Han Dynasty, paper has arguably been one of the most transformative Chinese inventions. The traditional method involved macerating plant fibers such as mulberry bark or hemp in water, followed by beating it into a slurry and then spreading this mixture on a flat piece of cloth to dry. Once dried, the resulting sheet could be used for writing, painting, and later printing. This remarkable innovation not only revolutionized communication and record-keeping in ancient China but also paved the way for the proliferation of literature, arts, and science worldwide after it spread along the Silk Road to the Middle East, Africa, and Europe.2. GunpowderGunpowder, composed of sulfur, charcoal, and potassium nitrate, was a Chinese invention of the Tang Dynasty around the 9th century. Originally conceived for medicinal and mystical purposes, it wasn't long before its explosive properties were harnessed for military use. The invention of gunpowder marked the advent of a new era in warfare, leading to the development of fireworks, rockets, and eventually firearms. Its use revolutionized the dissemination of knowledge, these printing techniques made it possible to produce books, newspapers, and other printed materials in large quantities, promoting literacy and enabling the wide spread of ideas, philosophies, and information. Printing played a crucial role in cultural, scientific, and political revolutions throughout the world.4. The CompassAnother significant Chinese invention was the compass, invented during the Han Dynasty (around the 2nd century BC). Initially, it was used for divination, fortune-telling, and geomancy. By the Song Dynasty (960-1279), it was being employed for navigation at sea. The compass dramatically enhanced maritime exploration and trade, making long voyages across the oceans more precise and safer. This navigational tool was instrumental in the Age of Exploration, opening up the world to global trade and interaction.5. SilkWhile silk is a natural material produced by silkworms, the technology of sericulture - the cultivation of silkworms for the production of silk - was a closely guarded secret in ancient China. Dating back to around 3,000 BC, the Silk Road eventually spread this luxurious fabric and the knowledge of its production across Asia and into Europe. The influence of silk extended beyond fashion. Its trade had profound effects on economies and diplomacy, fostering cross-cultural exchanges between East and West.6. PorcelainKnown in the West as 'china,' porcelain was another significant Chinese invention. Made by heating certain types of clay to high temperatures, porcelain was valued for its durability, thinness, and beauty. Originating in the Eastern Han Dynasty (25-220 AD), porcelain excellence was highly prized around the world, contributing to international trade and cultural exchange. This also signifies a transition from local, hand-draining customs to more sophisticated, wheel-based pottery-making techniques. Their unique aesthetic and functional properties, combined with advanced firing techniques, resulted in a material that transcended the boundaries of time and space, becoming a symbol of luxury and refinement. The Chinese ceramic tradition, characterized by its mastery of glazes and firing techniques, has left an indelible mark on the world's art and design heritage. The enduring legacy of ancient Chinese inventions extends far beyond the borders of China, having shaped the course of human history in countless ways. From the humble beginnings of papermaking to the revolutionary advancements in gunpowder and printing, these innovations have not only defined ancient China but also laid the foundation for the modern world we live in today. As we continue to marvel at the ingenuity and creativity of these ancient civilizations, we are reminded of the profound impact they have had on the human story.

18 (including two from the medieval period) most famous Chinese inventions:Before the invention of paper, people used different materials like wood, stone, and bone to write on. Around 2200 BC, the Egyptians discovered a type of reed called papyrus which could be used to write on by overlapping thin strips that had been soaked in water. The word "paper" was derived from papyrus.Paper was invented in ancient China around 105 AD during the reign of the Han emperor He Di by Ts'ai Lun (or Cai Lun), an official of the imperial court. However, a recent archaeological survey indicates that paper had already been invented 200 years earlier and was used by the ancient Chinese military. Ts'ai Lun used the bark of the mulberry tree and pounded the fibers into a sheet. Later, he discovered that the quality of the paper could be improved by adding hemp and old fish nets to the pulp. Soon, paper became the new writing material, and it only took a few years before it was widely in use all over China. Later, paper was brought to the rest of the world via the Silk Road.The invention of silk dates back to the fourth millennium BC during the Neolithic period. Apart from clothing, silk was widely used in a variety of sectors including writing, fishing, and for musical instruments. Silk was dominantly used by emperors and high-class society but later it spread to the rest of the world. The Chinese silk trade routes began around 130 BC and continued for more than 1,500 years. This made ancient China a superpower. This trade route was known as the Silk Road. The Chinese demand for silk led to the growth of the silk production in Western Europe. This resulted in an economic boom and Chinese silk started to decrease in value and exports. However, China dominates the luxury silk market today.Tea was discovered in ancient China by the Chinese emperor Shenlong in 2737 BC. Shenlong liked to drink hot water. One day during a march he and his army stopped to rest. His servant prepared some boiling water for him. A brown leaf fell into the water and the water turned brown. The servant presented it to the emperor, he drank it and found it refreshing.During the Han dynasty, tea was used as a medicine, and it was used as a drink on social occasions from the Tang dynasty (618-907 AD). Tea was prepared differently in ancient China than it is today. Tea leaves were processed and compressed into cake form. The dried teacake known as brick tea was ground in a stone mortar. The powder from the teacake was then boiled in a kettle, or hot water was added to it. It was then served as a hot beverage. White tea (compressed tea) was produced during the Tang dynasty, and it was harvested in the early spring when the tea leaves were still silver needles.The Chinese were ahead of the rest of the world in producing silk, and they used this silk to make kites, adding a resilient and lightweight bamboo framework to high tensile strength silk. Chinese philosophers Lu Ban and Mozi documented the first kite in ancient China in the fifth century BC. By 549 AD, paper kites were being used to carry messages for rescue missions. During the medieval period, the Chinese used kites to test the wind, measure distance, and for military communication. See also:Top 10 Astonishing Ancient Chinese Mythology StoriesThe Babylonians in ancient Mesopotamia invented sand cones to get shells around 1500 BC, but the cone beach technique or Archimedes' screw was generally planted in the 19th century. The cone beach technique was used to extract oil from the ground. The cone beach technique helped the Chinese reduce the cost of drilling. The Chinese developed the drilling rig to extract natural gas from the boreholes. The gas was carried by a bamboo pipe to its destination and used as fuel.By the 11th century, the Chinese were able to drill boreholes over 3,000 feet deep. The same technology was used to drill the first petroleum well in California in the 1860s.Porcelain was not a sudden invention, and an ancient form of porcelain existed during the Shang dynasty (1600 BC-1046 BC). It was perfected during the Tang dynasty and was exported to the Middle East.During the Song dynasty (960-1279 AD), the manufacture of porcelain became highly organized and reached new heights. By the time of the Ming dynasty (1368-1644 AD) porcelain was being exported to Europe, Africa, and Asia via the Silk Road.The Chinese considered south their cardinal direction, and the original compass was created by the Chinese using a lodestone to point south. This was called the south pointer. A lodestone is a type of mineral magnetite that aligns itself with the earth's magnetic field. The ancient Chinese discovered that a suspended lodestone could turn freely and would point towards the magnetic poles. During the Han dynasty, it was mainly used for geomancy and fortune telling. In the 11th century, during the Song dynasty, the Chinese figured out that the lodestone, which was primarily being used as a divination tool, could also be used to indicate a direction for travelers. In the book Shorter Science and Civilization in China, Volume 3 written by Joseph Needham, it is stated that the Chinese began to use the compass for navigation between the 9th and the 11th century. The compass was used to determine the cardinal directions. This was a major breakthrough because it allowed the Chinese to navigate safely and efficiently. The compass was used by sailors to find their way across the ocean. It was also used by merchants to find the best routes for trade. The compass was used by