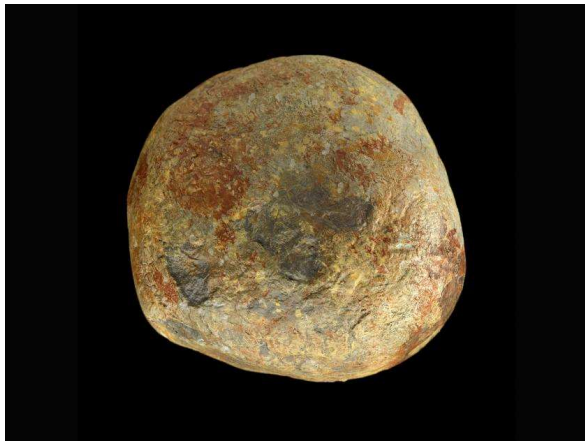


2.0.0 A BRIEF HISTORY OF CARPENTRY

NCCER 27101-06

A Brief History of Carpentry

- Primitive carpentry developed in forest regions during the latter years of the Stone Age, when early humans improved stone tools so they could be used to shape wood shelters, animal traps, and dugout boats.



Hammerstone



Handaxe

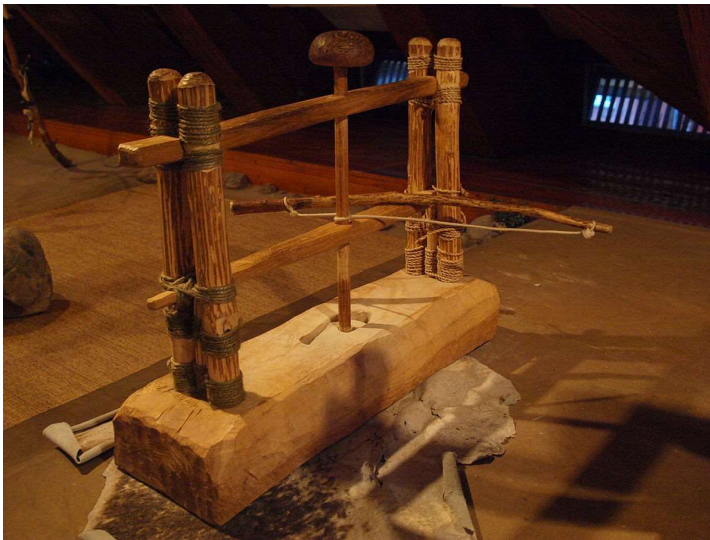
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- Between 4,000 and 2,000 B.C.E, Egyptians developed copper tools, which they used to build vaults, bed frames, and furniture. Later in that period, they developed bronze tools and bow drills.



Egyptian Copper Tools

Bow Drills



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- An example of the Egyptians' skill in mitering, mortising, dovetailing, and paneling is in the intricate furniture found in the tomb of King Tutankhamen ("King Tut").



- European carpenters did not produce such furniture until the Renaissance (1300 to 1500 C.E.), although they used timber to construct dwellings, bridges, and industrial equipment.

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- In Denmark and ancient Germany, Neolithic people (around 5,000 B.C.E.) built rectangular houses from timbers that were nearly 100 feet long.



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- In England, the mortised and fish-tailed joints of the stone structures at Stonehenge indicate that advanced carpentry techniques were known in ancient Britain.



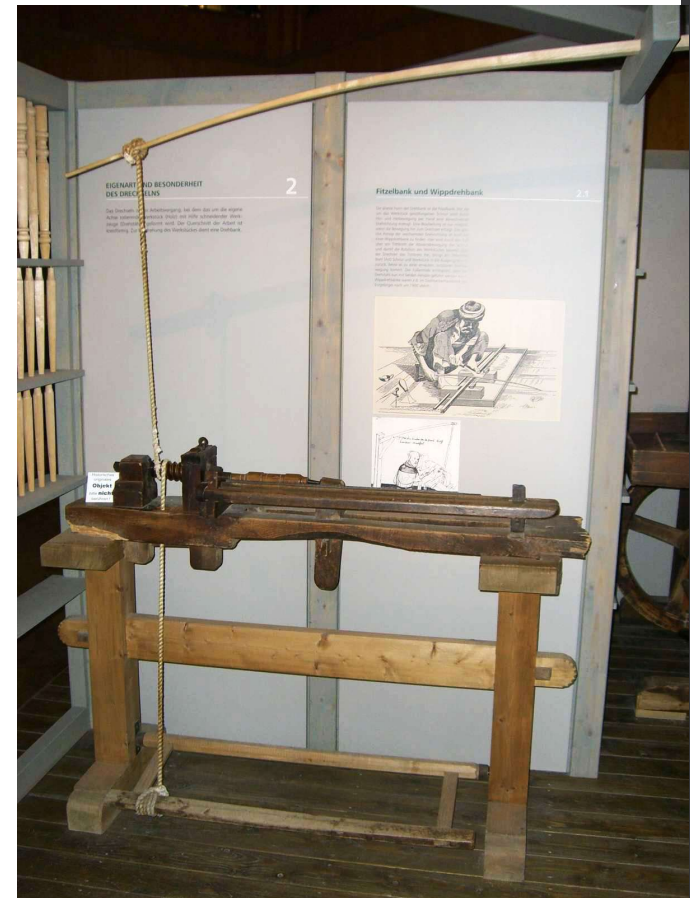
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- Before the Roman conquest of Britain (100 C.E.), its carpenters had already developed iron tools such as saws, hatchets, rasps, and knives.



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- They even have turned-wood objects made on primitive pole lathes.



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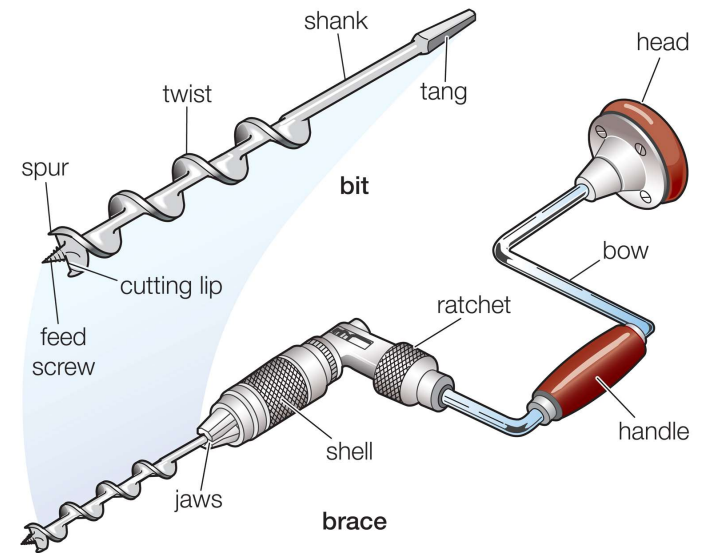
- In the Middle Ages (500 C.E. to 1400-1500 C.E.), carpenters began a movement towards specialization, such as shipwrights, wheelwrights, turners, and millwrights.
 - **Shipwright.** A shipwright is a builder of wooden ships.
 - **Wheelwright.** A wheelwright is a builder of wooden wheels.
 - **Turner.** An turner is a craftsperson who turns wood on a lathe.
 - **Millwright.** A millwright is a person who designs or builds mills or who maintains mill machinery.

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- However, general-purpose carpenters were still found in most villages and on large private estates.
- These carpenters could travel with their tools to outlying areas that had no carpenters or to a major building project that required temporary labor.

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- During this period (Middle Ages), European carpenters invented the carpenter's brace (a tool for holding and turning a drill bit).



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- The plane, which the Romans had used centuries earlier, reappeared about 1,200 C.E.



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- The process of steel-making also provided for advancements in the use of steel-edged tools and the advent of crude iron nails.
- **Iron.** Iron is a chemical element with symbol Fe (from Latin: ferrum) and atomic number 26. It is a metal that belongs to the first transition series and group 8 of the periodic table. It is, by mass, the most common element on Earth, right in front of oxygen (32.1% and 30.1%, respectively), forming much of Earth's outer and inner core. It is the fourth most common element in the Earth's crust.
- **Steel.** Steel is an *alloy* made up of iron with typically a few tenths of a percent of carbon to improve its strength and fracture resistance compared to other forms of iron. Many other elements may be present or added.

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- Wooden pegs were used to hold wooden members together before the use of nails.



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- To say nails are an old fastener would be an understatement. It's unknown exactly when nails were first invented, but archeological evidence shows nails were used in Ancient Egypt around **3,400 B.C.** Since then, little has changed regarding their design.
- The history of the nail is divided roughly into three distinct periods:
 - Hand-wrought (forged) nail (pre-history until 19th century)
 - Cut nail (roughly 1800 to 1914)
 - Wire nail (roughly 1860 to the present)



Ancient Egyptian wrought nail.



Cut nail.



Modern wire nail.

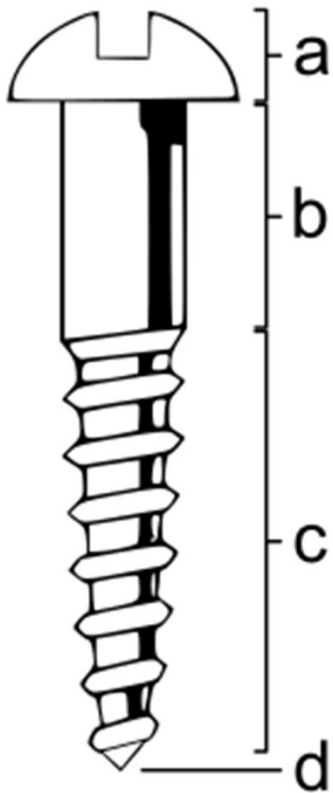


Medieval wrought nail.

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- **Screw.** A screw is a fastener typically made of metal and characterized by a helical ridge, called a *thread* (external thread).
- Metal screws as fasteners were invented in the 1500s.
- The metal screw did not become a common fastener until machine tools for their mass production were developed toward the end of the 18th century.
- This development blossomed in the 1760s and 1770s along two separate paths that soon converged:
 - the mass production of *wood* screws (meaning screws made of metal to be used in wood) in a specialized, single-purpose, high-volume-production machine tool;
 - the low-count, toolroom-style production of *machine* screws (V-thread) with easy selection among various pitches (whatever the machinist happened to need on any given day).

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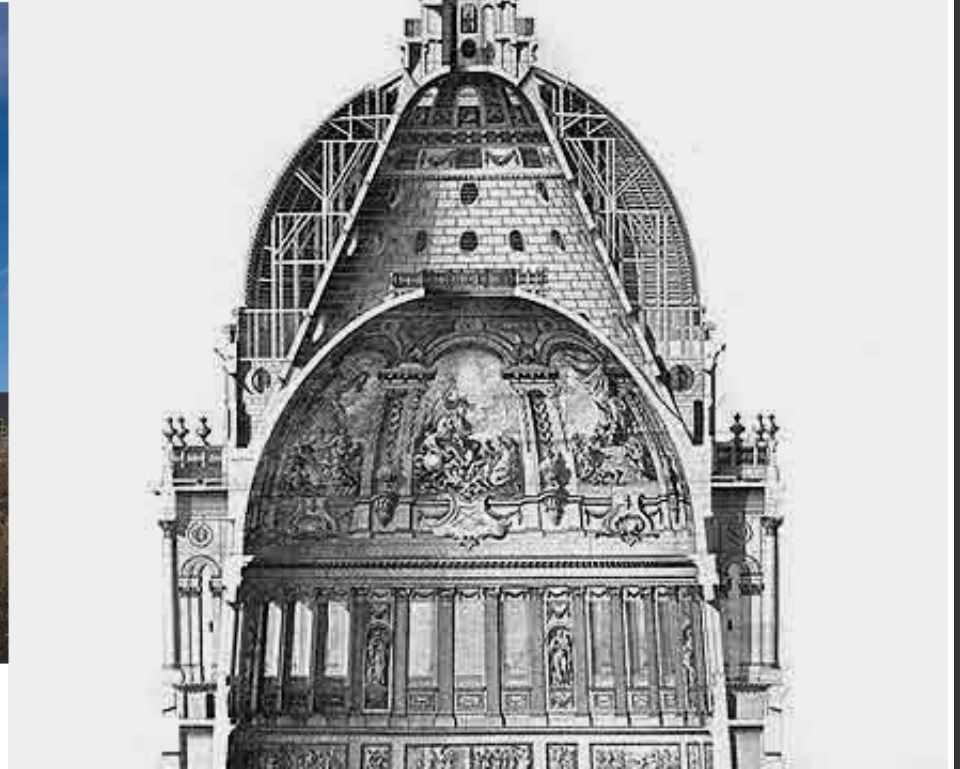
- The first castles and churches in northern Europe were constructed of timber.
- When the great stone buildings replaced those made of timber, skilled carpenters built the floors, paneling, doors, and roofs.
- The erection of large stone buildings also led to the inventions of scaffolding for walls, framework for arch assembly, and pilings to strengthen foundations.
- Houses and other smaller buildings were still made of timber and thinner wood.
- Clay was used to fill the gaps between the beams.

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- The art of carpentry contributed significantly to the grandeur of the great buildings of the Renaissance.
- Two noted masterpieces of *timber* construction are the outer dome of St. Paul's Cathedral in London and the 68-foot roof of the Sheldonian Theater in Oxford.

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- The outer dome of St. Paul's Cathedral in London.



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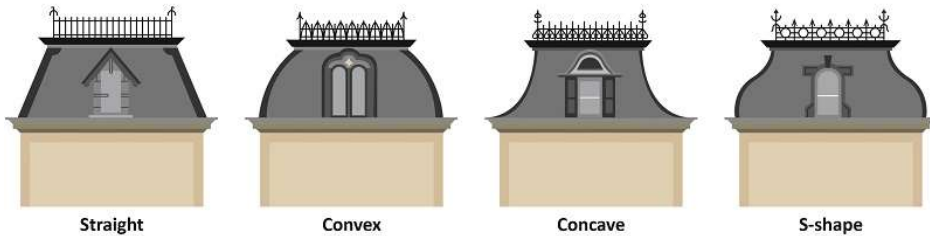
- The 68-foot roof of the Sheldonian Theater in Oxford.



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- After the Renaissance, other examples of architecture requiring skilled carpentry appeared, including the mansard roof with its double slope, providing loftier attics, broad staircases, and sashed windows.

Mansard types of roof



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- These architectural features were incorporated in the homes constructed in Colonial America.

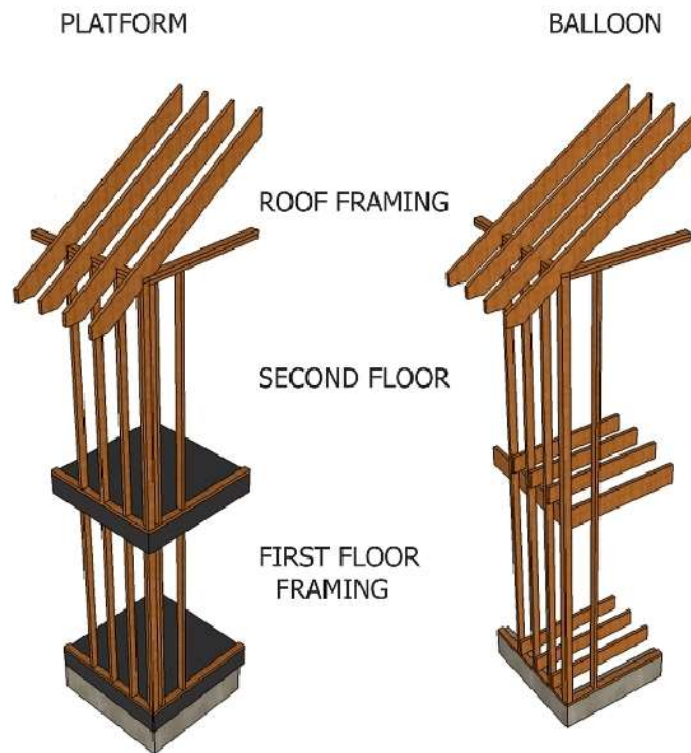


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- George W. Snow introduced balloon-frame construction in Chicago in 1840, which proved to be a much cheaper and quicker method because it used machine-made studs and nails.
- In balloon framing, the studs run from the bottom floor to the uppermost rafters. This method gives the structure exceptional ability to handle strong winds, but requires very long studs that are difficult to manufacture, and store.
- Because of these problems, and an inherent fire hazard, balloon framing has almost disappeared.
- It is used to some extent in Florida to frame the gable ends of buildings in order to provide protection from hurricanes.
- Today, platform (Western) framing has almost completely replaces balloon-frame construction.

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FRAME TYPES



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- This brief history illustrates that carpentry has a long and rich heritage.
- It also shows that carpentry is an ever-changing trade.
- You will inevitably discover that learning never ends as you practice the carpentry trade because new and better ways of construction will continue to emerge.