Tree borer / Pod auger

By Neil Searle

A twisted cylinder or Pump auger and the Pod auger. A long cylindrical trough, tapering at the bottom, with sides (one of which is sharpened) slightly twisted into a spiral ending in a pivot screw. As the tool cuts, one of the spiral blades diagonally side-cuts the hole to the full diameter of the auger, after which it ceases to cut. Generally after about ten rotations the auger bit is filling up with wood shavings and has to be withdrawn to be emptied.

Augers to drill holes in logs have evolved over the years from the type shown in Fig. 9 to the pod auger, Fig.1. to the variety shown in Fig.2.

Common Pod Gimlet Bits

Akin to nose bits are pod gimlet bits (Figure 11,C). These bits are the end products, or descendants, of probably more than 1,500 years of European wood boring technology. Pod augers began far back in antiquity and were probably used throughout the European continent. It was the area of Gaul, later Germany, that this specific technology continued well into this century. The term pod used to describe such tools is in reference to a dried pea hull or pod which, when opening naturally to release its seeds, take the shape of a pointed spiraled concavity. The pod gimlet bits for braces are simply miniature versions of much larger boring implements that were used with a T handle. This researcher's impression of the small brace pod gimlet bits is that they were not commonly manufactured in quantity in England or America but were imported in large numbers into both of these countries from Germany. In period catalogs they are referred to as "Swiss Bits". Generally they were a cheap bit made of relatively soft steel, often causing the pod to unwind under heavy use. Pod gimlet bits were sold in small sizes only

Extract from "English Bitstock Tools by James E. Price"

A regular hand auger of the day, with two cutting edges, would wander with or against the grain. The pod auger, with a single cutting flute, stayed true.

Fig.1. Pod auger used to bore water pipes from Tree trunks common in 15 - 17th centuries. Demonstrated by Gebhard Deda, in Germany, on YouTube.

When attached to a rod and handle they could be used to bore holes down the length of a tree trunk. The hollowed out trunk could subsequently form a pipe for a pump or be gravity fed and be used to convey water. The augers come in varied sizes, including a 'starter' auger. Then Rimmers were used, these were interchangeable and could be attached to the rod through the use of a square socket and key.

Fig. 2. An example of using the pod auger. It is called Pod auger in the United States due to its resemblance of the tapered cylinder to a seed pod.

Fig. 3. This set of pod augers and reamers was made by William Gilpin, an edge tool maker (1775-1835) the two pod augers on the right would have been used first to make the initial hole. The reamer does not bore at all, it only enlarges by side paring a hole already bored, also used by wheelwrights to enlarge wheel-hub-holes. Most examples were probably forged in the major metal tool manufacturing centers such as Remscheid and Sheffield.

In American early colonial days, water supply technology wasn't very complex. If you wanted water run to your house, you bored out your own wooden logs. If you wanted water for your town, large scale systems of bored-out logs were needed.

Fig. 4. The pod auger looks to be at least twelve feet long. Victorian-era engineers believed wooden pipes made the water taste purer and sweeter than metal and had a life expectancy equal to that of metal. Many woods were used, Hemlock, Oak, Pitch pine, Alder, Cypress, Elm and in some instances, white pine.

Fig. 5. Fresh water pipes from the 17th Century, when elm trees were used as pipes, their ends sharpened to form sockets. (This example is at Abby Mills Pumping Station in Mill Meads, East London.) Elm, because of its durability was also used on early wooden ships for the bilge pumps and cistern pumps. Joints in Roman times were often reinforced with iron collars.

Fig. 6. After the pilot hole is bored, the bit is changed out to a reamer to enlarge the hole. In order to facilitate the reaming, a rope is run through the hole and fixed to the hook on the end of the reamer. Now the work gets easy for the fellow twisting the handle as he no longer needs to push the auger, the fellow on the other end pulls the rope.

Figure 7. A reamer bit showing the adjustable attachment.

Boston, Massachusetts became home to one of the nation's first waterworks in 1652. Distribution pipes at that time were made of wood, constructed from bored-out logs from the area's plentiful hemlock and elm trees and attached together with pitch, tar, or iron hoops. While this rudimentary distribution system did supply some of the area's residents, it was mainly used for fire protection as homes during that time — constructed of wood and heated with fireplaces —were particularly prone to fire. Firefighters needing water would punch a hole in the pipe and then put a wooden plug in the hole when they were finished, hence the name "fireplug."

Victorian-era engineers believed wooden pipes made the water taste purer and sweeter than metal and had a life expectancy equal to that of metal. Constructed of staves held together by steel bands and covered with a thick layer of asphalt, wooden pipe was cheaper and they believed acids or minerals in the water would not affect it.

In Roman times timber pipes were routinely used. In the Medieval period timber pipelines were the most common and timber pipes were still being used in gardens for water and fountains well into the 18th century where they are frequently found in written accounts and occasionally also dug up. Examples can be seen in Museums all over the world.

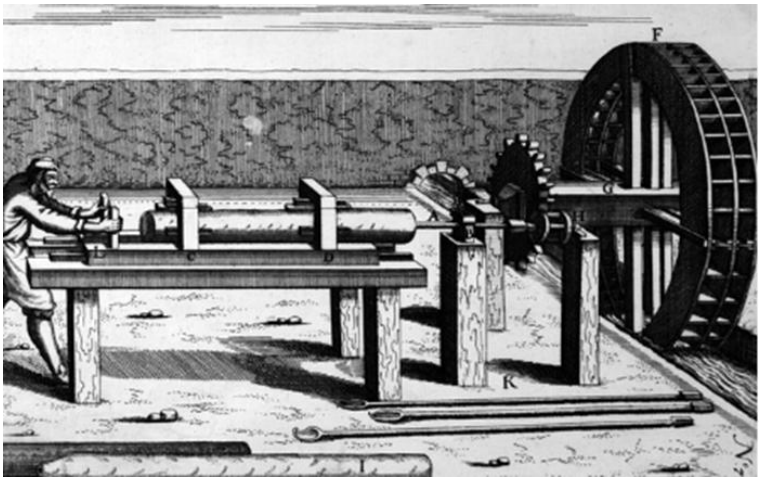

Fig.8. Illustration from Theatrum Machinarum Novum 1661 by Georg Andreas Böckler. A water powered turning lathe for boring wood. Note the augers lying on the ground. Water powered machinery was used extensively in the 15th through to and including 18th centuries for the mass production of wooden pipes.

Fig. 9. Similar to a dowel rounder that would fit a brace, and on a much bigger scale, this hand operated rounder with conical cutting head and integral cutter was called a “Sheepshead”.

In the USA, Pump logs were made in pairs. These were generally smaller diameter logs (sometimes squared) and because they were required to be laid in a straight vertical line, the opposing ends of each log were reamed out of fit the taper by a tool called a Rimmer. One log was eight feet long, the other, nine feet. This connection takes the form of a counter-bored female end and a reduced male end. When initially inserted, the male end was wrapped with a few turns of oakum (a coarse spun fiber, usually flax, hemp or jute), which swells upon contact with water. Once the pipes were filled with water, the wood swelled and formed a joint so tight that it could not easily come apart. Many readers will know that a “rod” is a centuries old measurement; a rod is sixteen-and-a-half feet.

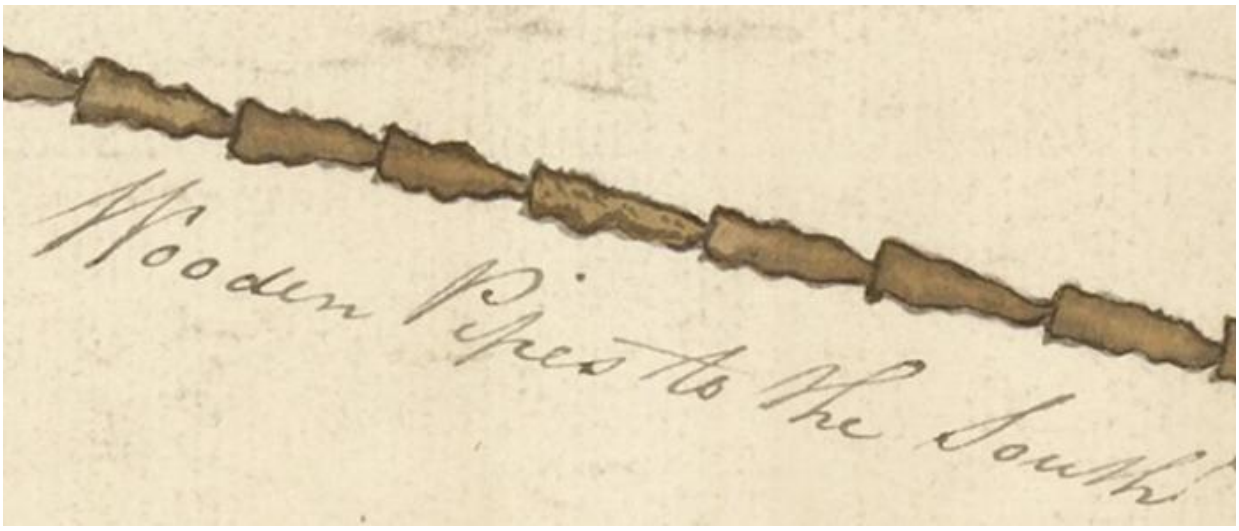

Fig.10. Part of an architectural drawing in Edinburgh, 1853, showing log water pipes. Well into the 19th century much of Edinburgh’s water was conveyed in wooden pipes.

In 2004, archaeologists in the UK discovered underground wooden pipes running through the ruins of a Roman fort in Northumberland. Water from a spring was still running through the 2000 year-old Alderwood pipes! While this is certainly unusual, wood needs both air and water to rot. Buried underground and filled with water, wooden pipes can last for decades—or centuries.

There are references to be found about wooden water pipes (water mains) in early Australia. Most houses in New Zealand cities had no town water supplies until the 1870s and so due to our infancy, missed the boat with wooden pipes.

Fig.11. Water pipe found on the boarders of England and Scotland.

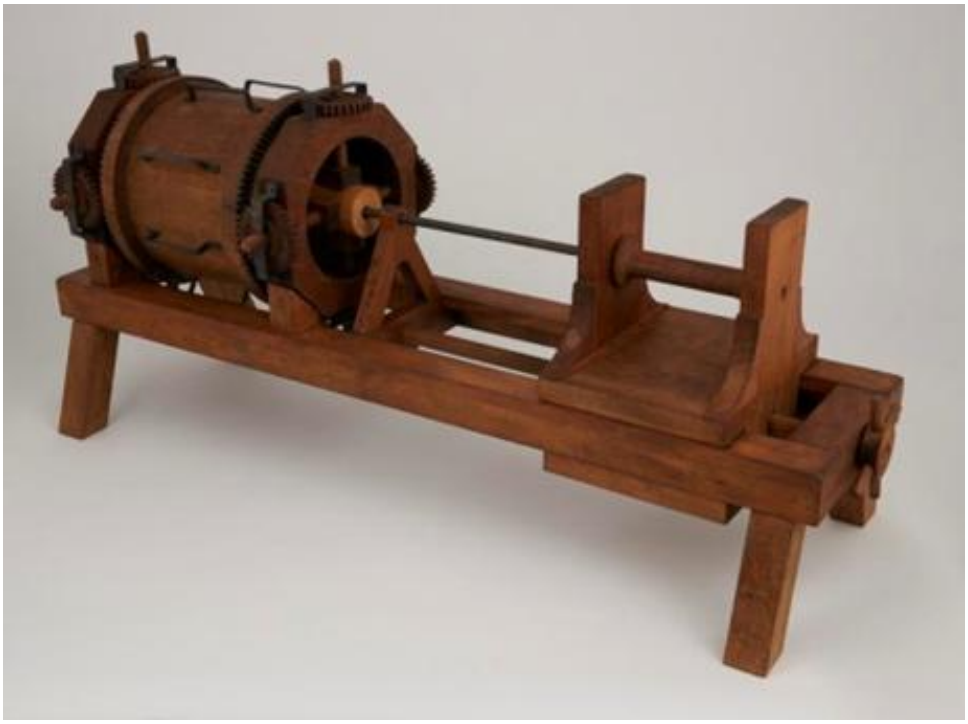

Fig. 12. Model of a boring machine from design of Leonardo da Vinci. This model has been made in accordance with Leonardo da Vinci's design in the Codice Atlantico, folio 393 R.b, which was written between 1483 and 1518.

It was intended for boring out logs for water-pipes and pump-barrels and is particularly interesting for its use of two connected self-centring chucks in which the log may be rapidly fixed in position, correctly aligned and centred. The chuck pair is made up of two fitting coaxial cylinders, the inner of which carries the chuck jaws, and is mounted on a bench. The outer cylinder, to which the handles are attached, has toothed rims which engage with threaded cog-wheels. When these wheels are rotated, the screws, which pass through them and to which the jaws are attached, screw in or out. By moving one of the handles, therefore, the jaws are made simultaneously to open or close.

The boring bit is attached to the front of a pulley which was presumably intended to be driven by a belt. The tool is supported near the chuck by a fixed bearing and is fed into the log by means of a lead-screw in the bench, which is turned by a winch.

Ref: Food Museum/eHive. Foxfire. Londonist. Vermont Journal. Mot.be. Hadley farm museum. Dr. James Price. Ancient Carpenters Tools by Henry Mercer. Sciencemuseumgroup.org.uk.