

A Paranumismatic History of Wood Saws

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Introduction

Since the beginning of civilisation, wood has been used for the construction of buildings, boats etc. At some point stone axes were replaced by saws with serrated materials such as flint, obsidian, seashells, and shark teeth. With the arrival of metals came the more hard-wearing, axe, adze, and chisel. Further improvements in metal working; alloys, tempering and hardening, brought the all-metal saw blade. There are Chinese, Greek and Roman claims for the invention but the archaeological record takes the metal saw back to at least 3100 BC in Egypt. As a practical tool the concept is likely much earlier, created by skilled people in many locations who did not make it into the history books.

This short note will describe a few paranumismatic items relating different types of wood saws, beginning with an engraved coin displaying the Hamilton family crest, the piece that started this study. This is followed by a token and engraved coins showing pit and trestle saws, Dingleys' Sawmill, circular saws, and a USA token from a bandsaw mill. To complete the technologies a medal for a pioneer of the chainsaw is presented. Whilst the last item is German; with over 650 outlets in the UK today, the company Stihl and its products should be familiar to most readers.

1. The Hamilton Crest.

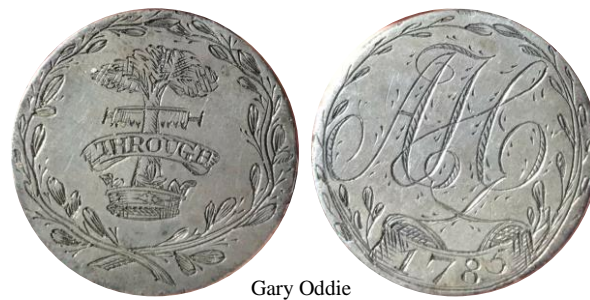


Fig. 1. Engraved silver “shilling” displaying the Hamilton crest, initials AH and date 1785. (150%).

Obv. Engraved - a tree issuing from a ducal coronet, with a saw on the trunk along with a banner reading **THROUGH**. All within a wreath.

Rev. Engraved - script initials **AH**, in a wreath with the date **1785** in a banner below.

Details. Silver, 25.4 mm, 4.5 g. Probably started off as a shilling.

The Hamilton name can be traced back to the Norman conquest when they were given land in England⁽¹⁾. By the 13th century the name was well established in Scotland having been given land in Renfrewshire by Robert the Bruce and shortly afterwards in Ireland⁽²⁾. Most Hamiltons today can be traced to the Scottish noble family.

Two similar legends exist as to why the family crest bears a frame saw. In 1325 Gilbert de Hamilton was in office at the court of Edward II. He had openly praised Robert the Bruce and in response a John de Spencer assaulted him for being treacherous. Hamilton challenged Spencer, but Spencer refused to fight, so Hamilton killed him. Hamilton fled northwards pursued by the de Spencer family. Being rapidly caught as they entered Scotland, Hamilton and his attendant borrowed the clothes of some woodcutters and started to fell an oak tree. As the Spences approached, Hamilton shouted **THROUGH!** (*Through* was the English term for the US *timber!*) This kept the pursuers at a distance. An alternative version has the saw being used to fell a tree that allowed Hamilton to escape across a river. Hence the saw, tree, and motto in the Hamilton family crest. Today the saw in the crest is described as a frame saw⁽³⁾.

It would be reasonable to assume that the second initial on the reverse is for a Hamilton, however a first search of the genealogical records for a Hamilton born in Scotland in 1785 with a first name beginning with the letter A reveals the following possibilities: Adam (2), Agnes (4), Alexander (8), Andrew (1), Ann (9), Archibald (1). With 25 candidate births, and not counting other reasons for engraving a love token, there is little possibility of taking this further.

2. Pit and Trestle Saws.

For cutting larger pieces of wood and logs lengthways there are a few options; either a pit can be dug over which the log is rolled, or a trestle can be built onto which the log is lifted. In both cases the saw is operated vertically by two men. The naval term for the wood being cut was the “dog”, which may be the source of the term top dog and underdog for the tiller man and box man (though more likely the term arises from dog fighting). The saws come in two forms, the frame saw, and the whip saw. The frame saw uses much less metal and is kept straight and in tension by a wooden frame that goes around the workpiece. A whip saw has a broader blade, wide at the top and narrow at the bottom, and is strong enough to remain straight by itself. The saw typically cuts on the downward pull and the upper man pulls the blade back to the top. Figure 2, taken from Diderot and D’Alembert shows two men using a frame saw to cut a piece of wood supported by two trestles. A similar image is found on the 17th century token issued by John Raine in Lambeth (Figure 3).

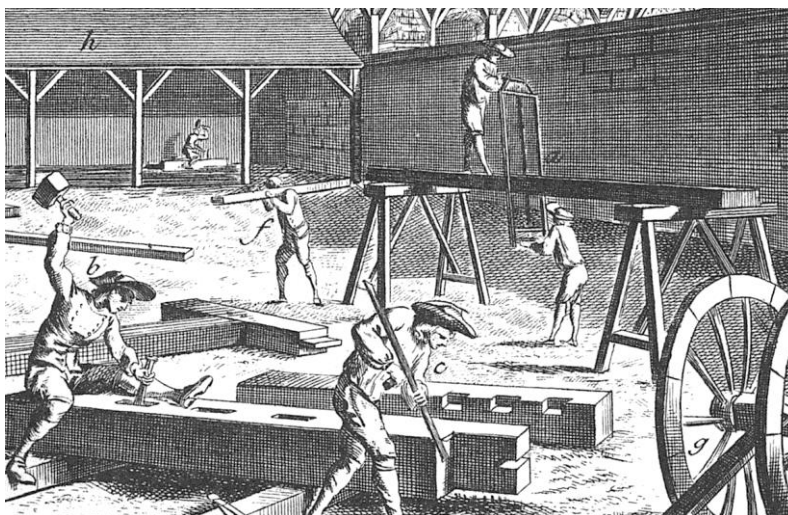


Fig. 2. Cutting a beam using a frame saw on trestles, Diderot and D’Alembert, 1763⁽⁴⁾.



© British Museum, T.5289

Fig. 3. John Raine’s seventeenth century token showing trestle saw in use, (150%).

Obv. **JOHN . RAINE . NEW . PLANTACVN** around **HIS HALFE PENNY R I A**

Rev. **NARROW . WALL . NEAR . LAMBETH** around two sawyers at work

Details. Brass, 21.0 mm, 2.280 g. W/D Surrey, Lambeth 170, N4661a.

This design is unique in the 17th century token series. The issuer has not yet been found, but the New Plantation appears to be an officially built group of houses (16/17thC) on Narrow Wall (now Belvedere Road). This was an ancient, raised way that had existed, probably since Roman times, to keep the tidal Thames out of the Lambeth marshes.



© British Museum, 1952,0904.47

Fig. 4. Engraved copper “halfpenny” of Stephen Chalk, 1783⁽⁵⁾, (150%).

Obv. Engraved **STE^N CHALK, 1783** within an ornate border.

Rev. A trestle saw. Man standing on large plank of wood facing right. He is leaning forward and holding one end of a long saw. Another man beneath him is holding the other end of the saw.

Details. Copper, 27.5 mm, 6.95 g. Probably started off as a halfpenny.

A first search of the records has found a few possible candidates – a Stephen Chalk, son of Robert and Elizabeth, was born at Folkestone in Kent on 13th October 1755. The Folkestone shipyards would have employed many men on the pit saws and an event at the age of 28 may have provided the motive for creating this piece. Alternatively, a Steven Chalk, son of Henry and Hannah, was baptised on 5th January 1783 at Winterborne St Martin, in Dorset (Martinstown).

The following piece is more finely engraved, clearly showing the variation in width in the blade from top to bottom. Searches for William French and I. Shelton have revealed several candidates, but nothing conclusive. Whilst the pierced hearts might suggest a love token, the legend “When this you see remember me” is more typically associated with sailors separated from their loved ones or convict transportation tokens.



Tim Millett 113

Fig. 5. Engraved copper “halfpenny” of William French and I. Shelton (150%).

Obv. Engraved **HOLT . MATE . LET . US . DRINK . WILLIAM . FRENCH** around.

I SHELTON in exergue. Trestle saw with two men above, one with a tankard. One man below, ladder to right.

Rev. Engraved **WHEN THIS YOU SEE REMEMBER ME** around two hearts doubly pierced, crown above, two flowers with stems below.

Details. Copper, 27.9 mm, 7.8 g. Probably started off as a halfpenny.

3. Sawmills.

It was only a matter of time before human power was replaced by a prime mover. Water powered sawmills can be found across Europe from the early 14th century and the Dutch are credited with the first wind powered sawmill. In 1593 Cornelis Corneliszoon van Uitgeest was granted a patent for a wind powered sawmill. This was a major innovation that made it much easier to saw planks and posts. The original drawing is shown in Figure 6.

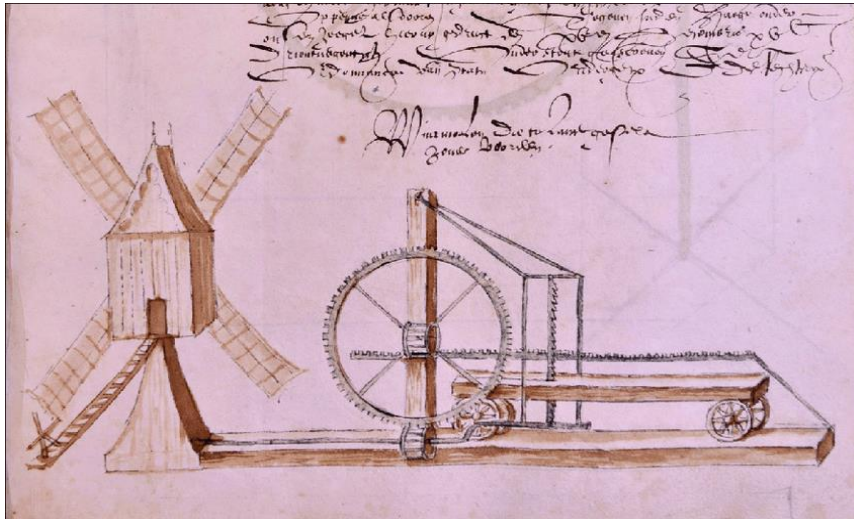


Fig. 6. Drawing from the first patent for a wind powered sawmill, 1593.

The earliest designs used a crank to convert the rotation of the mill to the reciprocating motion of the blade and an escapement/ratchet to incrementally feed the log past the blade. Other mechanisms used a cam which lifted and then dropped the saw in a manner similar to the water powered trip hammers used to crush metal bearing ores of the early 16th century. The increased speed and forces meant that a single saw blade required a frame but the cutting could easily be thirty times faster than a hand saw. The introduction of wind and water powered saws instantly eliminated the jobs of many pit saw workers.

The windmill designs evolved so that the whole saw mechanism was built inside the mill body and the base of the mill was large enough to allow a tree to be passed through. The result was a broader base on the wind powered sawmills than for mills used to lift water or grind grain.



Fig. 7. The last working wind powered sawmill, Het Jonge Schaap at Zaanse Schans, The Netherlands.



Tim Millett 013

Fig. 8. Engraved copper “halfpenny” of James Ross, 1769, (150%).

Obv. Engraved **James Ross 1769** with an engraved border.

Rev. Engraved **DISTRIBUTION STILL TO DINGLEY & HIS MILL** around tower windmill with four sails, door and windows.

Details Copper, 27.4 mm, 8.33 g. Probably started off as a halfpenny.

Britain was well behind Europe in the widespread adoption of wind and waterpower for driving sawmills. A water driven sawmill, built by a Dutchman, near London in 1663 “was the occasion of so much riot that it had to be abandoned”⁽⁶⁾. It has been speculated that the early powered saws worked better with softwoods, common on the continent, whereas in Britain hardwoods were in commonest use. In the Builder’s Dictionary of 1734⁽⁷⁾

There are mills for sawing wood, carried both by wind and water, which perform it with much more expedition and ease, than is done by hand . . . These are frequently found abroad and were lately begun to be introduced into England, but Parliament thought fit to prohibit them, because they would spoil the sawyers’ trade and ruin a great many families.

No such prohibition existed, and this incorrect statement was propagated through other dictionaries and cyclopaedias, all of which does suggest that powered sawmills were not commonplace in Britain at the time. By the late 1750s the Society of Arts had concluded that the belief in prohibition was ill-founded and published a very strong rebuttal of the misconception in 1768⁽⁸⁾.

In early 1767 Charles Dingley’s wind-powered sawmill started to operate at Limehouse, London⁽⁹⁾. The building of the mill had been supervised by James Hansfield, who had learned how to construct these machines whilst in Holland and Norway. According to the Annual Register, on May 10th, 1768,

A large body of sawyers assembled, and pulled down the saw-mill lately erected by Mr Dingley at Limehouse, on pretence that it deprived many workmen of employment.

In other accounts the damage to the mill ranges from minor to destroyed by fire. Parliament compensated Dingley for the loss with £2,000 on 27th February 1769. The mill was rebuilt, but it is not known if it operated again and in 1795 it was described as having been standing empty for many years. On 6th July 1768, Edward Castle was indicted at the Old Bailey “that he, together with diverse others to the number of one hundred or more, their names unknown, on the 10th of May unlawfully, tumultuously, and riotously assembled to the disturbance of the public peace, did demolish or pull down, or begin to pull down a certain out-house called a saw-mill, the property of Charles Dingley, Esq.; against the peace of our Lord the King, his crown and dignity”.

Following similar attacks on cotton spinning machines in the North of England, Parliament legislated against the destruction of buildings which contained machinery later in 1769.

There is however a much deeper story involving John Wilkes and a suspicion that the riot was organised. The riot at Dingley’s mill was later the same day as the massacre at St George’s Fields, Southwark, a gathering protesting at Wilkes’ imprisonment. The rioters were dispersed by the military and damage spread across the City. A contemporary satirical print “Perspective and Political View of the Timber-Yard

at L-e [Limehouse]” has Charles Dingley, standing by a ladder against a sawyer's frame near his sawmill, exchanging remarks with John Wilkes about the Magna Charta and Bill of Rights (Figure 9).



Fig. 9. Satirical print published after the attack on Dingley’s mill
(© British Museum 1868,0808.9817).

A further print in the British Museum dated March 8th, 1769 shows a riotous scene and fight “The Incharnted Castle, or Kings Arms in an Uproar” where the participants are identified as: John Horne Tooke, John Reynolds, Charles Dingley, and Samuel Vaughan⁽¹¹⁾. There is also an image of Dingley’s mill in the scene.

A more detailed investigation into Dingley, Wilkes and the contemporary political and industrial situation will be published shortly⁽¹¹⁾.

As yet, the identity of the James Ross engraved on the coin remains elusive.

4. Circular Saws.

Archaeological evidence suggests that small circular saws existed in prehistory in the Indus valley civilisations and at Lothal, Gujarat, but these were small discs for cutting stones. There are several claims for priority in the use of large-scale circular saws for cutting wood: Samuel Miller of Southampton (1777), Gervinus of Germany (1780), and Walter Taylor of Southampton who was block making for the dockyards from 1762, is described as using circular saws in 1790. Most of these claims are for extensions to an already existing circular saw concept. A large circular saw in a sawmill is credited to Tabitha Babbitt at Harvard, USA, in 1813. There are also Dutch claims for priority, but as with many inventions the exact source is unlikely to be determined.

As with the previous technology steps, improved steels and manufacturing techniques, combined with the availability of higher power from water and steam, provided a step change in efficiency as the intermittent cuts of the reciprocating blade are replaced by the continuously rotating circular saw.



Fig. 10. Engraved 1816 shilling with a circular saw bench, (150%).

Obv. Engraved **Calext Peruse** (?) above a circular saw bench. The outer edge is engraved to look like the teeth of a circular saw blade.

Rev. No modifications.

Details. Silver, 23.56 mm, 4.50 g. Engraved onto the reverse of a very worn 1816 shilling.

The script used for the engraved legend is not very clear and attempts to find a solution have thus far failed.



Fig. 11. Advertising fobs from E.C. Atkins & Co., (150%).

Obv. **COMPLIMENTS OF | E.C. ATKINS & CO. | THE SILVER STEEL | SAW PEOPLE | INDIANAPOLIS, | IND.**

Rev. Raised central hub.

Details. Aluminium, 25.4 mm, serrated edge, suspension loop and four central holes as on many saw blades.

Obv. **ESTABLISHED | 1857** above a facing portrait and **E.C. ATKINS**, all within a wreath.

Rev. **ATKINS ALWAYS AHEAD | E.C. ATKINS & CO. INDIANAPOLIS, IND.** Around **AAA TRADEMARK.**

Details. Bronze?, 32.0 mm, serrated edge, suspension loop.

In 1857 Elias C. Atkins chose Indianapolis as the site of his new saw works. Starting with \$300 the company was incorporated in 1885 and quickly became a multi-million-dollar empire with the largest factory in the world devoted to the manufacture of saws, tools and related equipment. In the 1920s there were Atkins saw shops across the USA and Canada. In the second world war the two Indianapolis factories were converted to the manufacture of armour plate and tools.

In 1952 Atkins was purchased by the Borg-Warner Corporation. The Indianapolis factory was closed in 1960-61 and its operations relocated to Greenville, Mississippi. The Nicholson File Co. bought the Atkins Division of Borg-Warner in 1966 and the Atkins name disappeared shortly afterwards.

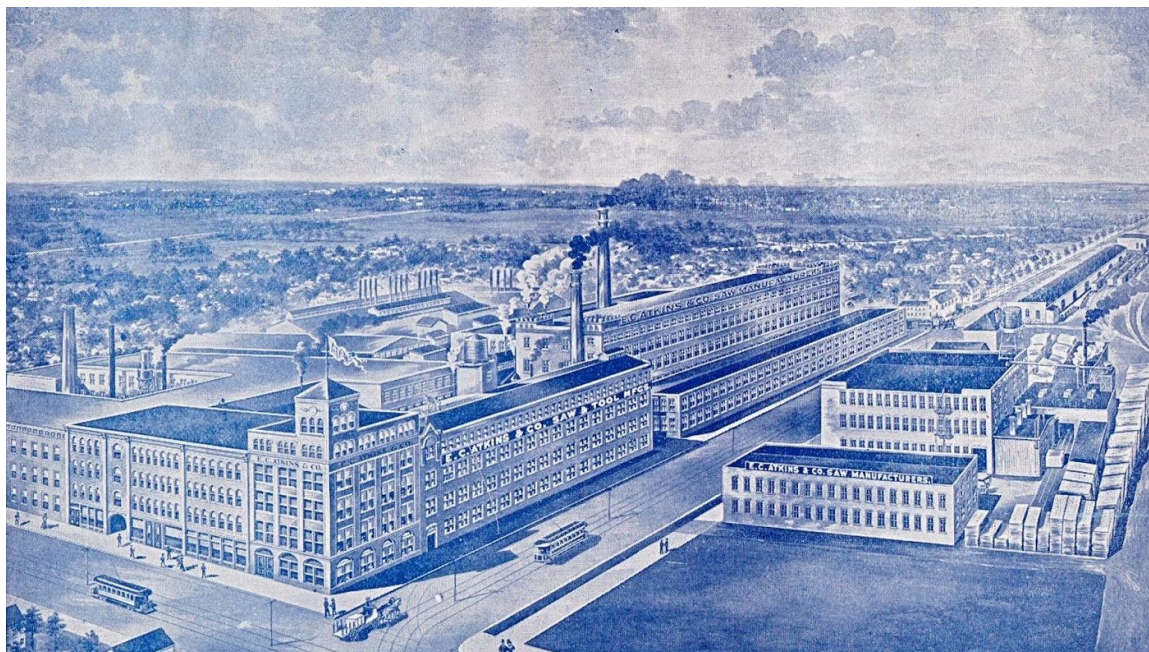


Fig. 12. E.C. Atkins & Co., Indianapolis factories, c.1923.

5. Bandsaws.

Another innovation to replace the intermittent cut of the reciprocating saw with a continuous motion was the band saw. Here a flexible narrow blade is formed into a continuous loop. The loop is driven and maintained in tension by two large wheels. This saw blade uses significantly less metal and is much more efficient than a circular saw as a narrow well-set blade has virtually no friction against the sides of the cut.

The idea may predate 1809 when William Newberry received the first British patent. However, it would take nearly another 40 years before accurate and durable blades could be manufactured, especially for the welded steel joints to survive the continuous flexing under tension.

The first reliable welded blade was patented by Anne Paulin Crepin in Paris in 1846 and it was further developed and marketed by A. Perin & Company of Paris.

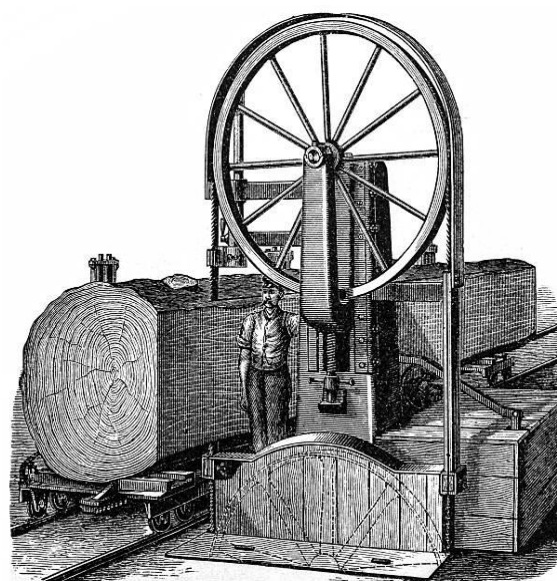


Fig. 13. Bandsaw from the 1890's © Getty Images.



© TokenCatalog.com

Fig. 14. Aluminium advertising token, issued by Norwood & Butterfield Co. Bandsaw Mills, (150%).

Obv. **NORWOOD & BUTTERFIELD CO. | LONG LEAF | YELLOW PINE | LUMBER | CHICAGO, ILLS. | AND | NORFIELD, MISS.**

Rev. **NORWOOD & BUTTERFIELD CO.** above a view of a sawmill with chimney and log being pulled in from a river. **BANDSAW MILLS | NORFIELD MISS.** In exergue.

Details. Aluminium, milled edge, 38.0 mm.

John Spencer Butterfield and Fred W. Norwood bought land in Mississippi and started a lumber business in 1884. In about 1886 they founded the township of Norfield and built a logging railroad eastward. The sawmill was built about 1891. Norwood left the company about 1917 when it became the Butterfield Lumber company and was sold to the Denkmann family in 1920. The mill closed in 1932 and the railroad in 1933 due to the depression and lack of demand for timber. The name Norwood survives today manufacturing mobile bandsaws.

Thus, the advertising token dates from 1891-1917. The reverse of this token appears on the front cover of a US Catalogue of Lumber Company Store Tokens⁽¹²⁾.

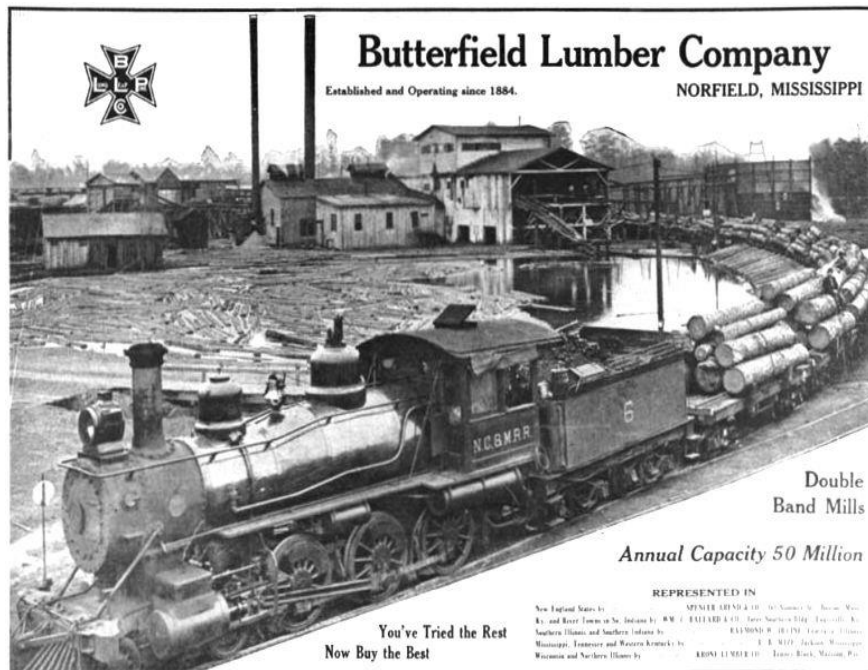


Fig. 15. Butterfield Lumber Company advertisement showing the sawmill, (1917-1920).

6. Chainsaws.

Flexible saws comprising serrated wires between two handles have been used in surgery since the late 18th century and a continuous small chain device for cutting bone is known from the 1830s. The first patent for an endless chain saw for wood, with a guide rail and cutting chain was filed in 1903 (granted 1905) by Samuel J. Bens of San Francisco. These were very heavy and used for felling giant redwoods. In Canada in 1918 James Shand patented a portable chainsaw, but it still required two people to carry and operate.

Several other names contributed to the development of the technology including Andreas Stihl with an electric chainsaw in 1926 and a two-stroke petrol engine powered chainsaw in 1929 which weighed 46kg. The development of aluminium engines after the Second World War allowed the introduction of chainsaws that could be operated by one person. Chainsaws have now almost completely replaced manual methods of tree felling and outdoor wood cutting.

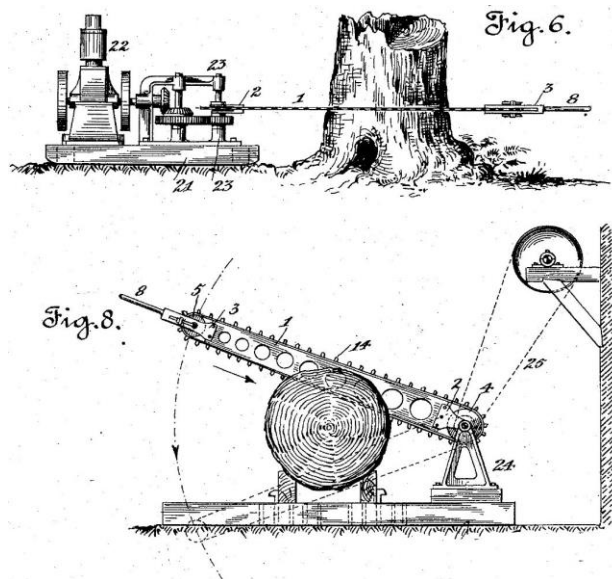


Fig. 16. Drawings from S.J. Bens' 1905 patent.



© Stihl

Fig. 17. Gold medal celebrating 120 years after the birth of Andreas Stihl, 2016, (300%).

Obv. Portrait of Andreas Stihl with legend **DEN MENSCHEN | DIE ARBEIT | MIT UND IN DER | NATUR | ERLEICHTERN | ANDREAS | STIHL | 1896-1973.**

Rev. Man with chainsaw at base of tree to right. On left Arms and legend **BADEN-WÜRTTEMBERG | 2016 ERFINDER & | WM TÜFTLER | STIHL® | CONTRA | 1959.**

Details. 0.999 Gold, 18.0 mm, 2.50 g. Also struck in MS95 Bronze (patinated and varnished), 175 g, 63mm and 0.999 Silver (patinated and varnished), 205 g, 63mm.

The motto of the company and its founder was “take the saw to the tree!”. The Contra® was the name given to the first chainsaw that was directly driven by the engine i.e., did not have a gearbox.

This medal is the tenth in the "Baden-Württemberg Inventors" series to be issued by Staatliche Münzen. Previous inventors celebrated include Carl Benz, Ferdinand Porsche and Gottlieb Daimler.

Conclusions

This note has covered several hundred years of the development of wood saw technology, as illustrated on paranumismatic items. Trestle and pit saws would once have existed all over the country keeping many people in employment, especially for shipbuilding. Britain's forests had been depleted for the navy and later for charcoal manufacture during the industrial revolution. The development of machines to drive the saws received early opposition in Britain but flourished on the continent and in North America where forests and large-scale use of wood for construction continue to this day.

Researching an engraved coin can definitely lead down some interesting and unexpected paths. In my workshop I have the following: an inherited 6-foot two-man cross saw, a circular saw (DeWalt), an electric chainsaw (McCulloch), and a two-stroke chainsaw (Partner) - I never thought I would write about them numismatically!

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