



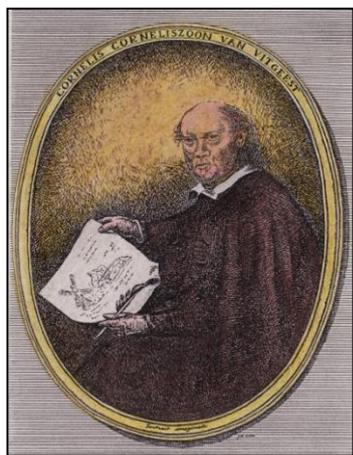
Cornelis Corneliszoon van Uitgeest Foundation

Remarkable innovations made by Cornelis Corneliszoon van Uitgeest in Holland's Golden Age...

This information is about an inventor and his inventions. The invention of the wind powered sawmill in particular. The inventor is named Cornelis Corneliszoon, a man from Uitgeest, a village north of Holland's capital Amsterdam. His most important invention was a wooden construction which he developed at the end of the sixteenth century. This construction turned out to be one of the greatest inventions of its time.

Many new inventions tend to be made during chaotic times of war and the threat of war. This was as true during World War II as it was during the Dutch revolt against the Spaniards in the sixteenth century (1568 - 1648).

The invention of Cornelis Corneliszoon is related to the sawing of timber. Up till then the sawing of wood had been a difficult and time consuming job, because much of it was done manually. The great advantage of the new invention was that it made it possible to saw timber with the help of wind energy. As a result thereof it became possible to saw large amounts of timber in a relatively short time. Thus boards and beams could be sawn, and these could be used, for instance, for shipbuilding.



The enormous growth of shipbuilding in The Netherlands in general - and the Zaan District in particular - was a direct consequence of this invention. From this period onwards the Zaanstreek (the Zaan District) was seen as Europe's first industrial area. In almost all books on windmills and windmill construction the invention of Cornelis Corneliszoon is reported and praised. But that is all. Through the book about Corneliszoon's inventions, published in 2002 (Celebration of the foundation of the Dutch East India Company in 1602) the authors have been aiming to give proper credit to the inventor and his invention, and to emphasize the historical importance of this revolutionary innovation. They position Corneliszoon between other inventors and innovators of his time. The book is also intended to raise interest in the objectives of the Industrial Heritage Park 'De Hoop', to rebuild sawmills (a paltrok sawmill and a 'board sawyer') as the focal points between several outbuildings in a heritage park. In the outbuildings to the mills there will be permanent exhibitions on the industrial development in The Netherlands in general and in the Zaan District and Amsterdam in particular.

*Cornelis Corneliszoon van Uitgeest
(1550-1607)*

Cornelis Corneliszoon was born in the middle of the sixteenth century, the exact date is unknown however. In his letter patents Corneliszoon calls himself 'a poor farmer with wife and children'. In a surviving contemporary document he was described as a 'sawyer on the Moldijck'. It is also known that he was a millwright who built windmills in a number of places, for example at Alkmaar a town north of Uitgeest, as well as outside the Province of North-Holland. He died most probably shortly before 1607. In that year his widow requested an extension of the patent from 1597, which was valid for ten years. She received an extension of another three years for the patent.

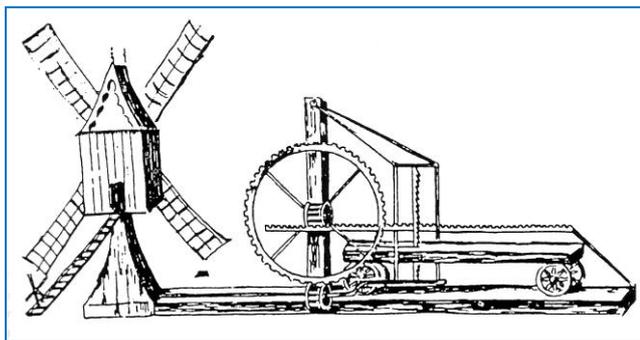
Corneliszon was a skilled inventor and innovator of windmill constructions. Apart from developing a technique for sawing timber with wind energy, he also developed a vital part for an oil mill, namely the use of edge stones which were needed to crush the seeds from which oil was pressed, and to process them into linseed meal. He also obtained a letters patent for a watermill with pumps and developed an improvement for animal powered mills. As will be clear, he was an extremely able and multi faceted man.

The invention of the wind powered sawmill by Cornelis Corneliszoon van Uitgeest

What exactly did Corneliszoon invent and how was the invention used?

Much has been written on this subject during the twentieth century. Issues discussed include the moot question whether the mill built by Corneliszoon had been placed on a raft or not. Some light was thrown on the matter by the discovery of the 'Resolutiën van de Staten van Holland' in the Dordrecht archives in 1917.

These documents include the actual letters patent granted for the sawmill on December 15, 1593. The relevant text was described in 1952 by G. Doorman vice-president of the Patent Council. One of the greatest surprises were the drawings which had been added to the patent.



Hollow post mill and drawing of the sawmill enclosed with the patent request of 1592.

On the grounds of the patent date and other points, we can conclude that the mill was built in 1594, i.e. sometime after the granting of the initial patent. It would seem logical to assume, therefore, that by 1592 Corneliszoon had been experimenting with the mill. As a result of the drawings we now know, how the mill looked like. We can describe the mill as follows:

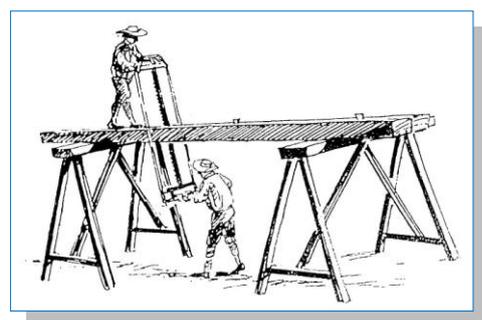
Corneliszon built a hollow post mill in the same manner as was customary at that time, namely a wind powered water mill with paddle wheel. The difference lay in the absence of the paddle wheel and the extension of the axle far beyond the mill. A saw bow, with scrapers, which was operated by a crankshaft, was driven by this axle. The whole sawing installation was housed in a separate building. The drawing shows a hollow post mill with a slim under-tower. Its resemblance to a 'juffer' (young girl) was striking and it was not long before the name 'Het Juffertje' came into existence. The mill moved to Zaandam in 1596 and shortly afterwards the so-called Paltrok mill was developed.

It should be noted that the same letters patent also refers to a mill on a raft and that this mill was also built and subsequently transferred to Zaandam. This mill contained a sawing installation as well as a couple of stones for the milling of corn.

Inevitably the idea of the crankshaft was adopted by others, without Corneliszoon receiving any financial reward. He therefore requested a patent for the invention of 'special' crankshaft. This letters patent was granted on December 6, 1597 for a period of ten years.

The concept of a crankshaft had been known for a long time before Corneliszoon adapted it for his mill, but the special element about the new invention was that the cranks were placed in different positions in order to help the movement of the saw bows. The patented crankshaft had three cranks which were placed at an angle of 120° to each other.

The significance of the sawmill against the background of the timber sawing craft



Hand sawyers objected the development of industrial sawing...

Following the invention of the saw mill, the production rose with 3,000 percent, as compared with the situation when timber was still sawn by hand. This increase in production was important because at the beginning of the seventeenth century there was a great demand for timber.

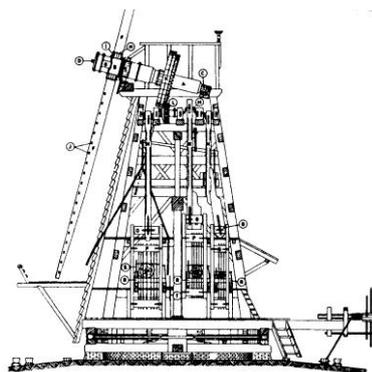
Production of timber by hand: 60 beams or trunks per 120 working days; production of the sawmill: 60 beams or trunks in 4-5 working days.

'Het Juffertje' sold to a millwright in the Zaan district

If there was one area which was eminently suitable for the location of windmills it was the Zaanstreek. There was a long ribbon development stretching north-south along the River Zaan, which included many canals and ditches. There were no impeding regulations for the building of sawmills, such as instituted by the Guild of Sawyers in Amsterdam. The many canals in the region, as well as the River Zaan, made it easy to transport wood and timber.

The people from the Zaanstreek were an inventive folk who set about perfecting the examples which they had bought from Corneliszoon. Within a short time the type of post windmill which was now called 'Paltrok' came into existence.

For the sawing of heavy trunks a Paltrok was needed with three saw bows. For thinner wood, such as that, used for panelling etc., millwrights developed the 'Wainscot saw' with two saw bows.



The Paltrok sawmill

The Paltrok formed as it were a sawing factory which could be turned as a complete entity on a low ring wall. The back and sides of the mill were open, only the front was closed and offered shelter to the miller and his team. Thus work was done under the mill's lee. Nevertheless it must have been very cold during the winter. The Paltrok mill was operated by five people: a foreman, a middleman, an under middleman and two boys.



In 1610, when the patents came to an end, a start was made with the construction of saw mills. This was done very quickly. Between 1614 and 1618 eight new sawmills were built in the Zaan District alone.

By 1630 there were 83 saw mills to the north of Amsterdam of which 53 were in the Zaan District. The number of mills reached a peak in 1731 when there were 450 sawmills, of which 256 were in the Zaan District. At that time there were only 25 sawmills in Rotterdam, while Amsterdam had only 80. There was simply not enough space in Amsterdam to build any more. The village of Westzaandam, in the Zaan District, carried off the prize for the greatest number of mills. It had a total of 194 windmills of which 159 were sawmills.

Also in the Dutch East India settlements sawmills were operated at the shipyards. Amongst others on the Isle of Onrust off Batavia (present Jakarta) and Colombo.

Ships on the Batavia Roads...

Economic growth

The demand for timber rose rapidly during the 17th century. The expanding population asked for construction timber for houses; there was a growing industrial activity, so warehouses had to be built; timber was needed for irrigation works and dykes. The heaviest demands for timber, however, came from the merchant fleet and the navy. Around 1600, according to the famous engineer Leeghwater, shipwrights could not build a large ship in the Zaan District. In 1609 a portage was constructed at Zaandam, which solved this limitation. As from that moment shipbuilding became a very important industry. After 1650 shipbuilding in the Zaan District expanded rapidly. During the period between 1678 and 1680, 54 ships were built. In 1708 there were 306 ships under construction.

After 1675 an independent timber market was developed at Zaandam. An important impetus in its creation was the fact that Amsterdam had started constructing its own sawmills and had imposed all sorts of bans and hindrances on the importation of timber from the Zaan District. The Hand sawyers' Guild of Amsterdam had been abolished in 1627. In addition the timber sawyers in the Zaan District had become sufficiently wealthy to start independent dealing in the capital-intensive timber trade. Industrialists bought and processed the wood and the ship owners built ships. Considerable information about this development can be gleaned from published timber auction books.

Sources of wood

The most important sources of wood at that time were Norway, the Baltic Sea littoral, Hamburg, Bremen and the River Rhine. Most of the timber which was originated from the Rhine areas, was bought at the Dordrecht auctions. In the Zaan District the timber trade grew out of the timber industry. At its height the number of auctions held annually between 1715 and 1740 rose to more than 40.

It is evident that because of the many sawing activities concentrated along the River Zaan, Uitgeest and surrounding area's further north, were unable to compete. Nevertheless, it did benefit from all sorts of side lines related to the sailing industry. For instance, in 1731 there were 9 industrial windmills at Uitgeest, of which 3 were hemp scutchers and 1 a sawmill.

The sawmill was built in 1629 as a Paltrok mill with 3 saw bows. It was this mill, called 'De Hoop', which burnt down in 1911. The mill was situated along the Uitgeest Binnenmeer (Inner Lake).

Replica of sawmills to honour Corneliszoon

The initial idea was to build or rather rebuild a Paltrok mill on the spot where the saw mill 'De Hoop' burnt down in 1911. After further studies however, this plan has been dropped, as the project would have exclusively dealt with a Paltrok mill. Thus the versatility and range of the plan would have been limited. Admittedly, with the construction or rebuilding of a Paltrok mill a tribute would have been paid to Cornelis Corneliszoon van Uitgeest. Nevertheless, the Board members of the Foundation were of the opinion that with such a development the costs and benefits would remain out of balance. The project had to be functional. It should offer something to a wide audience. It needed to be both recreational and educational. It has therefore been decided to realise a project with a multi-functional character.

The paltrok sawmill will be the focal point of the project. Two other buildings as well as a slipway have been constructed to complete the park:

- a shed for drying sawn timber; with a small sawmill (called 'Corneliszoon') for additional sawing productions;
- a shed, to be used as a carpentershop and museum.

The slipway will be used for building flat bottomed small historical ships.

All objects will be built in the authentic Zaan District manner.

The board-sawmill on the drying shed...



Another famous son of Uitgeest: the famous cartographer Willem Janszoon Blaeu (1571-1638)



In the museum an important place will be occupied by the works of Willem Janszoon Blaeu, the cartographer of the Dutch East India Company (VOC). Blaeu was born at Uitgeest in 1571. He was married to Maritgen Cornelisdochter from Uitgeest. Although Willem Janszoon was intended to work in the herring trade of his father, he appeared to be more attracted to mathematics and astronomy. To further his interest, he travelled, in 1594, to Denmark to study under the famous astronomer Tycho Brahe, becoming his assistant at the astronomical observatory on the small island of Ven in the Öresund between Denmark and Sweden. Here he learned the art and science of instrument and globe making.

Willem Janszoon Blaeu (1571-1638)