JOHN WEBB'S 1804
WINDMILL
THAXTED
ESSEX

A GUIDE to the History, Restoration and Working of a fine 19th century Tower Mill.

The HISTORY,
Restoration & Machinery of
JOHN WEBB'S WINDMILL
THAXTED ESSEX

By

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John Webb's windmill, south-west of the Church, played an important part in the life of Thaxted for almost a hundred years. This account of it has been compiled from many sources and is intended to place the mill in its historic setting as part of the story of Thaxted.

THAXTED'S LOST MILLS

There is a long history of mills and milling within the parish. The first local reference is in the Doomsday survey (1085) which records two mills in Thaxted; but these were almost certainly water-mills. A fragment of medieval glass in the Becket chapel in the Church shows a water-mill. Windmills seem first to have been built in Europe in the 12th century and the invention was, of course, welcomed in the dry eastern half of England where there were fewer stream with enough power to drive a mill-wheel.

Medieval records of accounts (1377) include the repair of the Thaxted **Church Mill** which stood on the site of our present mill and had disappeared by 1770. A second important medieval windmill was **North Mylle**. In the 14th century this occupied a small area at the top of the great Northfelde, near Mill Hill Farm. In 1361 it was damaged by a storm and the cost of repair - 52 shillings and sixpence - was shared with the Church Mill. A new sail rod, 6 iron hoops, 600 feet of boarding for re-roofing and iron nails were provided and it took 67 working days to repair the damage. By 1639 the site was referred to as 'the old Mill HIll' with a house belonging to Widow Newborne and it appears to have been linked to Thaxted by the old Roman highway down to Water Lane. The Mill was not shown on the 1777 map of Chapman and Andre but evidence of the mill's existence was unearthed recently when a barn at Mill Hill was demolished. Although it is not on the 1777 map, the 1853 rate-book shows it as owned by Will Giblin, who must have died sometime between then and the publication of White's Directory in 1863 when Elizabeth Giblin is shown as the owner. It is probable, almost certain, that it was of a post-mill construction.

There appeared to have been two mills at **Mill End** but little is known of them and they seem to have disappeared by 1844. Both are shown on the 1777 map, one near the present site of the tennis courts on the Dunmow Road the other where the primary school now stands. It is interesting to note that well into the nineteenth century the Mill End area continued to be used in various ways for the corn business. In 1853 James Willis owned Corn Chambers there, and a malting is recorded. By 1863 this corn business appears to have been owned by Robert Fitch, who maintained it in Mill End whilst living in Bolford Street: in the same year two other corn merchants, John Caton and John Eaton, both had premises in the same district.

In 1770 the year that the old Church Mill was demolished, a post mill was built at Boyton End near the **Thaxted Hall** (formerly the Fox and Hounds Public House); it was probably a very necessary replacement since the demand of milled grain was on the increase. In 1853 it was owned by John Belsham who lived at Bardfield End Green and he still had it ten years later. It was demolished in 1897, and evidence of its foundations are still visible.

Still using that invaluable reference the 1853 rate book, we find that Samuel Pettitt owned a mill at Sibleys Green and in 1863 Charles Wicks is recorded as the cornmiller. About this time, the fate that overcame many mills overtook this one and it was burned down. Fire was always a real danger and unless the mill sails were under complete control in all weather conditions, the wooden machinery could overheat and ignite. The field in which it stood is still called Mill Field and is part of Sibley's Green Farm.

JOHN WEBB'S MILL

Corn growing, malting and milling increased greatly at the end of the 18th century and its importance continued well into the next after the Napoleonic Wars. In the first half of the nineteenth century there was a great growth of population in Essex - about 70 per cent. In the immediate locality Saffron Walden grew by 80 per cent and Dunmow by 60 per cent. This growth, together with a population explosion in London, created an increased demand for bread and beer. Malting, brewing and milling became growth industries and in turn created a demand for better communication. When transportation improved the industries were themselves further stimulated. The Stort Navigation Development opened up the area between Saffron Walden and Bishop's Stortford so that local agriculture was able to supply some of the basic needs of the growing city of London. Even as late as the publication of William White's Directory in 1863 there is evidence that cereals were vitally important to Thaxted's economy as the following employment list shows. There were 33 farmers, 2 maltsters, 13 taverners and beer-house keepers, 4 cornmillers, 5 corn dealers, 1 millwright and an Excise Officer who presumably was concerned with the duty on malt. In addition there were all the normal shops and trades of a rural community numbering 2300.

As well as the newly opened canal system a mail coach ran three times a week from Aldgate via Thaxted to Saffron Walden: wagons carrying goods and general merchandise linked Thaxted with the city markets four times a week. The steady demand for milled grain by 1800 made the time ripe for another mill to be built in Thaxted. Malting and milling had long replaced the ancient trades of cutlery and cloth making: and it is reasonable to suppose that the building of the post mill by the Thaxted Hall in 1770 hardly replaced the production of the old Church Mill, demolished in the same year, let alone satisfying the growing market. Something more efficient was needed and John Webb (Senior) was the obvious person to supply it.

John Webb must have been a man of importance and enterprise in his day, and he would have been fully aware of the profits which came to the successful miller and farmer in times of shortage. He owned the Borough and Park Farms and other property in the town. His land included what is now known as the Plantation and here the local clay was dug and prepared for use: nearby there stands a clump of trees and near them a country pottery was sited - making simple household pots for local use, probably as a side-line from the main job of producing bricks. It was from these bricks that John built his great tower mill and although they were low-fired and soft they have stood up to two hundred years of wind and weather. We don't know for sure how successful a

JOHN WEBB'S RESTORED WINDMILL

Thaxted Mill circa 1895

venture this mill was, nor what tradesmen were employed to build it, but we may be able to deduce some of the answers from the following fragments of information.

We do not know who the millwright was but records exist of the trade being carried on in the locality later in the century. Mr. Samuel Sturgeon, born in Thaxted in 1846, was apprenticed to a millwright and worked in the district until he was 43. He was a skilled blacksmith and came from a line of smiths who had plied their trade in the town continuously for 140 years. Another millwright Joseph Cooper, lived in Town Street in 1863. It may be that John Webb employed the forebears of these men - we do not know. We know however, that John (Senior) died in 1834, three years before Queen Victoria ascended the throne, left a lot of property, including the mill, to his son John Webb (Junior) and that he left other property to his daughter's husband Robert Franklin. The 1853 ratebook tells us that the Mill and Borough Farm were rated for £7.0s.6 ¼d at 10d in the pound: and it shows John Webb (Junior) as a wealthy man who owned, in addition to the farm and the mill, odd parcels of land, four houses, and thirty two cottages spreading from Bolford Street and from The Borough over the hill to Park Street and Mill End.

The mill was finished in 1804 and John Webb (Senior) announced the fact by putting a small inscription on a stone and fixing it in the wall of the mill. The building is a sturdy affair with 18" walls at bin floor level and 4' thick at the base. The great timbers supporting the heavy machinery, the machine wheels themselves, the windshaft and the sail stocks would have been hoisted into place with rope and tackle and chain gear, and it must have been an exciting day when the great sails turned for the first time. At first they would have been spring sails needing individual adjustment from the gallery below, for it was not until 1807 that patent sails were invented: later around 1845 the spring sails were replaced with patent sails and the brick tower was raised by four feet to accomodate the larger sails, and the mill finished its working life with patent sails. Before considering the mechanics of the mill, however, it may be interesting to continue to fill the gaps in its history as far as we are able.

John Webb (Junior) died in 1863 and remembered in his will his two millers Joseph Thurgood and Robert Low; he left them nineteen guineas each for faithful service - no mean sum in those days. All the rest of his real estate, including the mill, and his personal belongings he left to his brother-in-law Robert Franklin who, when the will was made in 1856, was living at Park Farm. This substantial inheritance was added to what he had inherited from his father-in-law in 1834, Robert Franklin was an auctioneer and by the time John Webb (Junior) died he moved to Watling Street. He decided to let the mill and in the same year as he inherited it he signed an agreement with Arthur William Clarance, a cornmiller who lived in Town Street, to hire 'the Mill and a Barn on Fishmarket Hill' for £45 per annum, payable half yearly at Lady Day and Michaelmas.

Robert Franklin died in 1869, six years after his brother-in-law, and the mill passed to his son Thomas. Whether it was because neither father nor son were millers by trade, and hence had little interest in its maintenance or because the mill had been worked hard we don't know, but certainly by 1888 it was badly in need of the repairs

which were carried out between June and September of that year. When the millwright, Walter Gentry of Braintree, presented his bill for £200.2s.11d. Thomas Franklin was taken aback. After confidentially consulting his friend Walter Letch, builder and undertaker of Braintree, he wrote to Mr Gentry on 7th November as follows:-

'Your account to repair the Old Mill is an outrageous amount to pay - the value of the building - But to get the affair done with and out of the way - it will not be out of mind - if you will throw off 5 per cent, making the total £190, I will sent you a cheque at once.

It will ever be a sore place and had I have known the cost before beginning that should not have been touched.'

Mr. Gentry would not agree to five per cent reduction, however, and after explaining costs and the very small profit he was making - 'I get 10d. per day profit from each man' - says. 'No wonder Master Millwrights end these days in the Work House.'

On November 12th 1888 Mr. Franklin sent a cheque for £200 to settle the account, with a covering letter which began:

"I very much regret that I had not known what the cost would be to repair the Old Mill before you began it - I should quickly have known what to do... the Mill if sold tomorrow would not make the money it has cost me.'

and he ended with a postscript

'Mr Gentry, PS I wish I could forget this but it sticks much to close.'

In addition to Mr. Gentry's account, Mr. Franklin had to pay £64.10s. to Mr. O.E. Ratcliff of Thaxted, for materials supplied for the repairs of the mill that year (1888). More repairs by Mr. Gentry were apparently necessary in 1891, at a cost of £87.7s. and again in 1901 when Mr. Thomas Franklin wanted to see yet another 'dissatisfactory Bill settled and out of sight, if not out of mind... I hope I shall not have any more repairs to the mill.'

In 1907, on the death of Mr. Thomas Franklin, the mill was put up for sale, but was withdrawn. The particulars of sale state that 'has 4 floors and 2 Double and 2 Single Patent sails driving 3 pairs of 4ft.3in., 4ft.6in., and 5ft. French Stones.' It was let to Mr. Harry Lowe on a yearly Michaelmas Tenancy at £35.00 per annum.

RESTORATION

The mill was in working order in 1900. By 1910 the sails were chained and ceased to turn. By 1930 they were decayed and broken and the mill was used as a happy hunting ground for children at play.

In 1932 the Thaxted Civic Trust, a body concerned to restore some of the town's old and valued buildings, acquired the mill and restored its main fabric so that it could

be used as a meeting place for young people. The sails were removed, leaving only the stocks, and the building became a Youth Club and Scout centre. In the mid fifties the affairs of the Civic Trust were wound up and ownership of the mill passed to the Parish Council on condition that it could not be sold, turned into a private dwelling nor used for private gain.

The Thaxted Society was formed as an amenity body in 1963 and was largely responsible for persuading the County Council to commission Donald Insall's architectural Survey of Thaxted. Publication of the hundred page report which followed recognised the importance of the mill as part of the Thaxted scene, and this strengthened the case for preservation. The Society approached the Parish Council to carry out some essential repairs and the County Council were asked to include the building in the Conservation Area. Thus the importance of the mill became officially recognised.

At a public meeting in 1969 a Steering Committee was appointed to consider the restoration of the mill and its future use. In the following year a Windmill Committee and Trustees were elected and an appeal for funds was launched in the town and district. The blessing of the Historic Buildings Council was obtained and local fund raising began. In a little over eighteen months sufficient had been raised for stage one of the restoration programme to begin.

Work began in the winter of 1972-73 and rendered the mill safe and weatherproof. Timbers were replaced and the cap was covered with aluminium sheeting. The tail and spindle beams, and the supporting timbers for the windshaft were replaced, floors were re-laid, sack-traps were re-established and the window openings were provided with new frames and shutters. Finally, stairways were installed throughout the building so that visitors could have access to all floors.

The second stage was completed in 1977. Some of the curb timbers and part of the iron rail on which the cap rests were replaced and the supporting brickwork was repaired. The trolley and truck wheels which had been idle for 75 years were partly freed, but this work was only partially successful and it was some years before we were able to turn the cap by wind power. However the new fantail which was erected and since modified is still being used today.

In 1978-79 new stocks and sail frames were erected and the mill began to look more as it had done originally. Extending 70 feet from tip to tip the sails stood out against the skyline and gave encouragement to us all.

In 1980 the exterior brickwork was re-pointed in an attempt to reduce the amount of water penetration, and in 1981 all internal timbers were treated with insecticide and fungicide to destroy beetle infestation. This operation revealed serious defects in the timber ends, due mainly to the wet conditions and these were strengthened by bolting massive angle iron supports to the beams where they entered the brickwork.

The original dust floor, removed as unsafe in 1972, was replaced by G.M.N. Hitching of Thaxted early in 1982. It is a work of excellent craftmanship wholly in

keeping with its surroundings. In the same year R. Thompson & Son, Millwrights of Alford in Lincolnshire were asked to take over the restoration work, and plans were laid to get all the machinery working again. In 1984 Thompsons made and installed a new wallower and repaired the brakewheel.

After so much effort there were hopes that the next stage would include clothing the sails with shades and installing striking gear, but unfortunately it was found that the metal stocks which had been erected in the 1970s showed signs of metal fatigue and could not be used. The use of metal for this purpose had been tried at a number of mills with the same result so it was decided to replace them with pitch pine from Honduras. Logs 46' long 14" x 14" were specially imported. When, in 1987, these were installed, one pair of the old sail frames and one new pair were bolted to them and shades and striking gear were fitted to the new pair.

The work undertaken in 1988-89 included further efforts to get the cap turning. This involved replacement of the weather beam and more new timbers in the curb. The trolley and truck wheels were freed at last and the fantail mechanism made to work so that it could operate properly. Thus after eighty years the cap was able to turn so that now the sails are always facing the wind.

In 1991 the new sail frames were given 132 wooden shades and all the fittings required for their operation and finally on 22nd October the sails turned in the wind for the first time in 85 years.

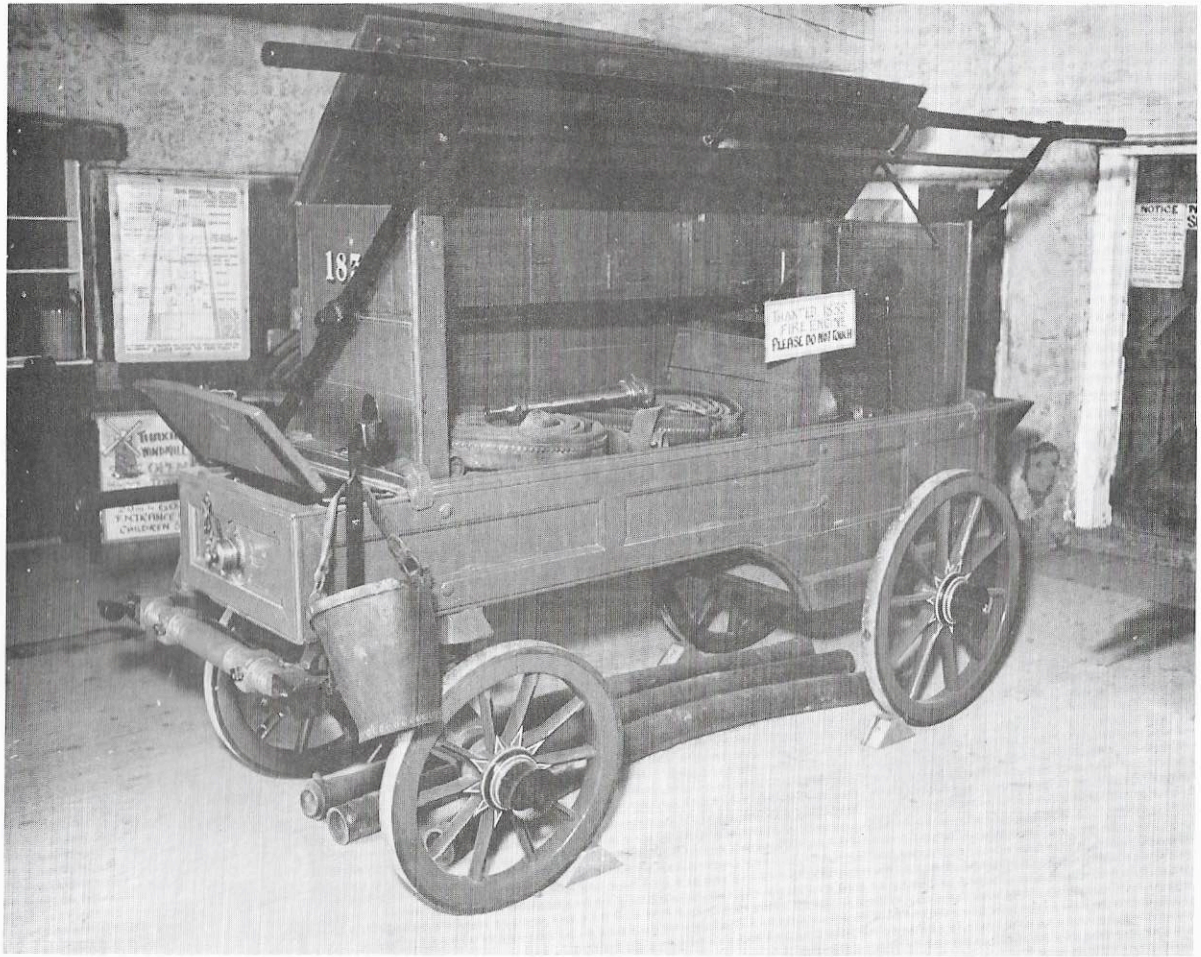
The restoration programme continued in 1993 when the second pair of sails were finally clothed, and the sails will now turn in a moderate wind.

One set of stones was restored to working order in 1996 and again after a period of some ninety years the mill is capable of grinding corn into flour.

The replacement of the wooden gallery around the outside of the mill was completed in 1998 and once again the mill was restored to its former glory as it was throughout the 19th century.

In April 2000 disaster struck, the cap turned into the wind as it has done over many years and as it turned the rear hangers on the cap caught the brickwork at the top of the brick tower and tore out almost a metre of bricks. The cause of the damage was put down to the ingress of water over a period of approximately 150 years, in fact from the time the tower was raised around 1845 when the new patent wooden sails were first installed on to the mill replacing the old original canvas sails.

The rain had over many years softened the mortar and the weight of the cap had caused the outer skin of bricks to slowly bulge and the hangers eventually caught the bricks and pulled them out. Experts from English Heritage together with our millwright Tom Davies carried out a detailed survey and decided how best to repair the mill. The solution was to remove the cap and sails which weigh some fifteen tons and completely rebuild the top metre of brickwork. This was going to be a very expensive exercise and the Trustees were unable to fund this major expense themselves,so an appeal was made to a number of charities, but despite their generosity there was still a



The restored Thaxted Fire Engine, 1835, housed
on the ground floor of the Mill Museum.
(Photograph by Mark Arman)

John Webb's Windmill, Thaxted, c.1972. Before the work of restoration began.

substantial shortful, so an approach was made to the National Heritage Lottery Fund who decided that the repair of the windmill was a worthy cause and agreed to meet the balance of cost. Finally after some three years the necessary funding was in place and the repairs started in the autumn of 2003 with completion in the spring of 2004. The repair was carried out with great care, old bricks from the tower were cleaned and reused where possible and some four thousand new bricks were hand made to match existing ones both as to size and colour. The old bricks that were reuseable were placed on the outside of the tower and Essex sand was used in the mortar mix so the total repair blended in with the existing tower and one is hard pressed to see that a major repair has taken place from the outside of the mill. At the same time the opportunity was taken to replace the oak curb on which the cap sits and revolves and was showing signs of rotting. All the wood work was repainted, including the sails and cap using lead paint which is only available to listed buildings.

The mill was reopened in the spring of 2004 four years after being closed to the public.

It is clear that the restoration of old buildings is a never ending business but if we are to maintain our heritage for future generations this is the only course open to us.

Restoration work over the years has involved expenditure of over £400,000. The Heritage Lottery Fund English Heritage, Essex Environmental Trust, BAA through Stansted Airport, Essex County Council, Uttlesford District Council, The Council for the Protection of Rural Essex, and our own Parish Council have all helped with grants. The Trustees of Yardleys Charity have always given us generous support. Friends of the Mill make an increasing contribution to the funds. Volunteers give freely of their time both for the day to day maintenance of the mill and at opening times throughout the season and this enables us to fund the continuing maintenance programme by opening to visitors throughout the Summer months. The project is a communal effort of which the town is justly proud.

Tribute must be given also to our millwright, Mr. Tom Davies of R. Thompson & Sons, for all the work he has done for us and for his advice on all things technical.

HOW THE MILL WORKS

The simplest type of windmill is the **Post Mill;** a wooden framed body containing the machinery, supported by a single massive upright post on which it was turned bodily towards the wind by means of a long tiller-beam manipulated by the miller. Sails were frames on which canvas was stretched; to reduce speed the canvas had to be furled as with ship's sails.

Wooden towers were a later development and these were known as **Smock Mills.** Instead of the entire mill body being turned to the wind only the cap moved, the wooden tower body remaining stationary; the cap was moved into the wind by various means, the most advanced being a fantail, set at right angles to the sails; when the wind

blew this automatically turned the cap so that the sails faced the wind and so maintained full power to the machinery. This invention was used on most of the later tower mills.

The **Brick Tower Mill** represented the pinnacle of mill design and generally speaking these towers were larger than the other types The walls were thick and strong and able to take heavier machinery and greater weights aloft, and this led to a greater potential of power and larger production. Since Thaxted's John Webb Mill is of this type a broad explanation of how the machinery worked may be of interest.

Everyone knows that the source of power is wind, and this power is transmitted to the stones on the stone floor by a system of wooden cog wheels. The sails rotate only when they are facing the wind, and do so at all times. This is achieved by the fantail which is located at the other end of the windshaft at right angles to the sails. When the wind changes the fantail rotates and engages a gearing system which turns the whole cap until the sails again face the wind. Once this is achieved the fantail becomes motionless, until the next change of wind.

Not only must the sails face the wind, they must in some way *catch* the wind if they are to, operate successfully. For this purpose **shades** (shutters similar to venetian blinds) which can open and close are fitted into sail frames and these are controlled by a system of rods and levers which are operated by a **striking rod:** this passes through the **windshaft** and is activated by a chain at gallery level. Using this apparatus the miller can set the sails to the wind or open the shades so that the wind passes through them and allows the sails to remain motionless. The sails are bolted to two wooden **stocks,** set at right angles through a metal canister situated at the end of the **windshaft.** The huge metal shaft passes at an angle through the cap and around it the **brakewheel** is secured: a wooden brake encircles the wheel and when this is tightened it brings the wheel, the **windshaft** and the sails to a standstill.

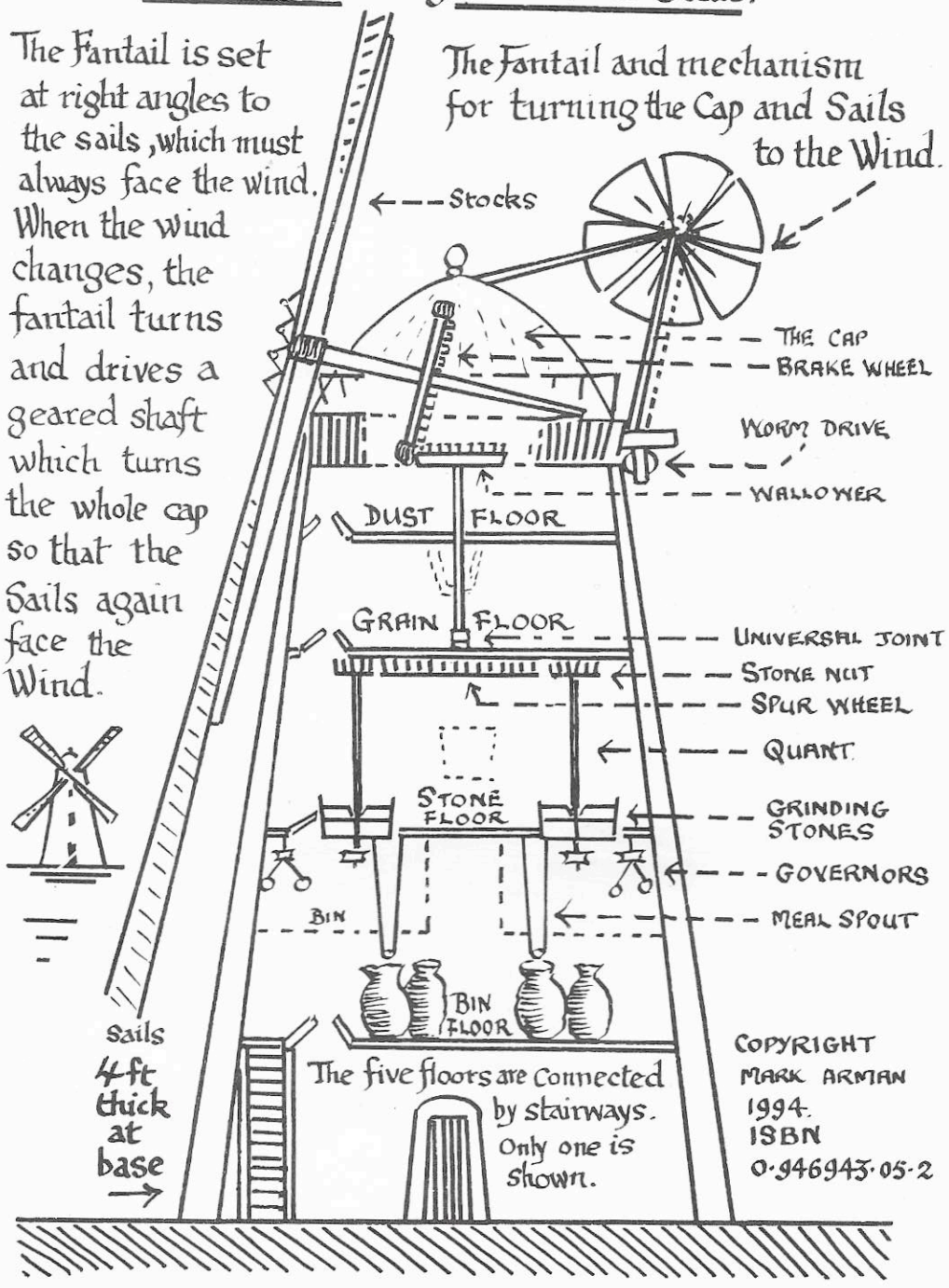
Reference to the diagram shows that the drive is transmitted from the **brakewheel** to the **wallower** and then down through the dust floor and the grain floor to the **spur wheel** in the ceiling of the stone floor. When it turns, this wooden machinery is subject to considerable movement and vibration, so the shaft to the **spur wheel** is given a **universal joint.**

The **spur wheel** transmits power to three **stone nuts,** which are iron cogwheels each of which have a vertical shaft to the stone below. When a **stone nut** is pushed into gear it drives the runner stone to which it is connected by the iron shaft or **quant**, and grinding can then begin.

With the stones engaged and turning the corn will be fed into the hopper above the stones and will pass down the shute into the hole in the centre of the runner stone known as the eye. Only the runner stone will be moving, the bed stone is immobile and as the grains of corn pass between the two stones they are converted into flour, which finds its way to the outer edge of the stones, is swept to the edge by the rotating runner-stone and passes down the spout into a sack on the floor below.

John Webb's Windmill ~ Thaxted

Built 1804. Diagram not to scale.



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The power transmitted through the mill machinery did a lot more than this however, and it controlled many ingenious devices as well.Governors similar in principle to those used on old gramophones to control the motor and turn-table speed, were used to maintain a constant fineness of meal regardless of the speed of the wind. Complicated cogging systems were used to harness power to lift sacks of grain or flour, sound alarm bells and to drive bits of machinery such as sieving and screening apparatus. It would take a sizeable book to begin to deal with these complexities. Most guides and booklets are helpful, but one book in particular is most useful, 'Windmills and Millwrighting' by Stanley Freese, and it is recommended to anyone wishing to delve further into this fascinating subject.

THAXTED WINDMILL MUSEUM

The first exhibit was the 1835 Thaxted Fire Engine, owned by the town and expertly restored by Mr. Arthur and Mr. Barry Moore. It was drawn through the town in 1976 by the serving Fire Brigade using their 20th century engine, and housed in the Mill. Other exhibits followed and within a year a modest collection of farm hand tools was displayed. Now there are exhibits on two floors and the collection may be described as an interesting and extensive rural museum containing a wide range of bygones.

Obviously the mill is suitable only for certain types of exhibits, the emphasis is on hand tools and equipment of the 18th and 19th centuries. The collection is more concerned with what is interesting than what is valuable and many panels display homely bits and pieces which anyone could collect. Much of the restoration and re-handling of tools was done by Mr. Joe Barrett who has shown great skill and sensitivity.

Whether it be a range of bush draining tools or a collection of clay pipe pieces some of which are 300 years old, or panels of saddlery tools, visitors will find much to interest them.