# GLOSSARY of TERMINOLOGY

*Alfred Abraham*
*The last miller*

Listed here are terms in use at Upminster Windmill. These do not include regional variations, or terms specific to other styles of windmills.

*Suggested reading for details of windmill features, see,*
*The Windmills of England by Rodney de Little (ISBN 0952993007)*

**BACKSTAYS** *Picture*
Brace the sail frame from the stock.

**BAY** *Picture*
The space between two *Sail Bars*.

**BED STONE** *Picture*
The lower stationary *Millstone*.

**BELL ALARM** *Picture*
A leather strap in the *Hopper* measures the grain level, and triggers a warning bell when refilling is necessary.

**BIN** *Picture*
Contains the grain in the upper floors of the mill.

**BIN FLOOR** *Picture*
Contains the trapdoors for refilling the *Bins.*

**BOLTER** *Picture*
Early type of flour-dresser (sieve).

**BOLTING CLOTH** *Picture*
Cloth sieve that covers a *Bolter* drum.

**BRAKE (Brake Band)** *Picture*
Operates on the rim of the *Brake Wheel* to stop the *Sails*.

**BRAKE LEVER** *Picture*
Actuates the *Brake*. (School Physics: a second order lever.)

**BRAKE ROPE** *Picture*
Enables the *Brake* to be operated from any floor.

**BRAKE WHEEL** *Picture*
Largest gear wheel in the mill, mounted on the *Wind Shaft* in the *Cap*.

**BRIDGE TREE** *Picture*
Supports the lower end of the *Stone Spindle.*

**BRIDGING BOX** *Picture*
Adjustable *Stone Spindle* bearing on the *Bridge Tree.*

**CANISTER** *Picture*
Used to attach the *Stocks* to the *Wind Shaft.* (See *Pole End*).

**CAP** *Picture*
The movable top of a *Smock* or tower mill.

**CAP CIRCLE** *Picture*
Circular beam on the under side of the *Cap*.

**CAP GALLERY** *Picture*
A walkway around the sides of the *Cap*.

**CAP SHEERS** *Picture*
Main lengthways timbers of a *Cap*.

**CLAMPS** *Picture*
Set either side of the *Poll End* to strengthen the *Stocks*.

**CLOTH SAILS**
The same as *Common Sails*. (No longer used at Upminster)

**COCK HEAD**
The tip of the *Stone Spindle*.

**COMMON SAILS**
Early cloth-covered *Sails*. (No longer used at Upminster)

**COMPASS ARM WHEEL** *Picture*
A wheel whose arms are mortised into its axle shaft.

**CORNER POSTS** *Picture*
The posts that form the corners of a *Smock Mill*.

**CROWN WHEEL** *Picture*
Bevel gear mounted on the *Upright Shaft* that drives an auxiliary shaft for powering various machinery and the *Sack Hoist*.

**CURB** *Picture*
The ring beam on top of a *Smock* or tower mill body upon which the cap turns.

**DAMSEL** *Picture*
Device fitted on the *Stone Spindle* that vibrates the *Shoe* to keep the grain moving.

**DOUBLE SHUTTERED SAILS** *Picture*
*Shutters* on both sides of the *Whip*.

**DRESSER**
General term for a *Bolter* or *Wire Machine* (a sieve).

**DRESSING** *Picture*
The pattern of furrows cut into the face of a *Millstone*.

**DUST FLOOR** *Picture*
Floor just below the *Cap*.

**EYE** *Picture*
The hole in the centre of the *Runner Stone*.

**ENTER TIES** *Picture*
Horizontal beams between the *Corner Posts*. On the *Meal Floor* where they rest on the brick base of the mill, they are known as Sills.

**FAN** *Picture*
A small set of *Sails* positioned at right angles to the main *Sails* that detect wind direction and move the *Cap*. (See *Fantail*)

**FAN SPARS** *Picture*
The same as *Fly Posts*.

**FAN STAGE** *Picture*
A platform at the rear of the *Cap* to provide access to the *Fantail.*

**FAN STAR** *Picture*
Iron hub of the *Fan*.

**FAN STAYS** *Picture*
Metal stays between the *Fly Posts* and the *Cap*.

**FANTAIL** *Picture*
The assembly at the rear of the *Cap* that automatically turns the *Sails* to face the wind.

**FLY POSTS** *Picture*
Upright posts which support the *Fan* on the *Fantail*.

**FRENCH BURR** *Picture*
A variety of stone from the Marne Valley in northern France, which is preferred for grinding flour. *Millstones* made from this are built up from blocks, not a single piece of stone.

**FURROWS** *Picture*
The main grooves in the grinding face of a *Millstone*.

**GALLERY**
Platform around the *Cap* or tower of a *Smock Mill*. (See *Cap Gallery* and *Reefing Gallery*.)

**GATE**
A slide found in some *Shoes* to restrict the flow of grain.

**GEAR BOX** *Picture*
Worm drive and pinion mounted in a frame located inside the *Cap.* This reduces the revolutions of the drive from the *Fan*, and transfers the drive down to a pinion engaged with the *Rack*, which turns the *Cap*. A handle on the worm drive shaft allows the *Cap* to be rotated manually.

**GOVERNOR** *Picture*
Maintains the correct gap between the *Millstones* depending on *Sail* speed, by adjusting a *Steelyard* attached to the *Bridge Tree.*

**GRAIN CLEANER**
Machine for cleaning grain.

**GREAT SPUR WHEEL** *Picture*
The large spur gear that drives the *Stone-nuts*.

**GRIST**
Term for meal used for animal food.

**GUDGEON** *Picture*
Iron pin projecting from a wooden shaft to act as a durable axle.

**HACKLE PLATE**
Prevents dirt entering the bearing in the *Bedstone*.

**HEAD WHEEL**
Alternative name for the *Brake Wheel*.

**HEMLATH** *Picture*
Outer edge timber strips that join the tips of the *Sail Bars*.

**HOPPER** *Picture*
Contains the grain just above the stones.

**HORSE** *Picture*
Frame that sits on the *Vat* to supports the *Hopper* and *Shoe.*

**JACK STAFF**
Used to check the vertical position of the *Stone-Spindle*.

**JOG SCRY**
Inclined trough with sieves in the bottom to grade the meal.

**KING STUD** *Picture*
Centre post of each wall, morticed top and bottom into the *Enter Ties*.

**LANDS** *Picture*
The raised parts between the *Furrows* of a *Millstone*.

**MACE** *Picture*
The lower part of a gimbal assembly that is fitted on the *Stone Spindle.* The gimbal carries and drives the *Runner Stone.*

**MEAL BIN (Meal Ark)** *Picture*
Receives the ground meal from the *Stones.*

**MEAL FLOOR** *Picture*
Where most of the milling controls are located.

**MIDDLING** *Picture*
Kentish term for a *Stock*.

**MANUAL WINDING PINIONS** *Picture*
Two pinions for disengaging the *Fantail* drive. When disengaged, the *Cap* can be wound around manually to wind the sails.

**MILL BILL and PICK** *Picture*
Tools for *Dressing* the *Millstones*.

**MILLSTONE** *Picture*
A circular stone for grinding. Used in pairs, the bottom *Bed Stone* remains stationary, whilst the upper *Runner Stone* revolves.

**NECK BEARING ROLLER** *Picture*
Heavy rollers upon which the *Wind Shaft* rests and revolves.

**NECK JOURNAL** *Picture*
The bearing surface of the *Wind Shaft* behind the *Poll End*.

**PASTRY ROOM** *Picture*
Encloses the *Great Spur Wheel* and lower *Upright Shaft* bearing.

**PATENT SAIL** *Picture*
A sail with *Shutters* that are opened and closed by the *Striking Gear*.

**PETTICOAT** *Picture*
Vertical boarding around the lower part of the *Cap*.

**POLL END** *Picture*
An iron *Canister* in the form of two open ended boxes set at right angles to one another, into which the *Stocks* are mounted.

**PRIMARY BEVELS** *Picture*
Crown gear and pinion driven by the *Fantail* spindle.

**PROOF STAFF**
A very accurate *Staff* against which the working *Staff* is checked.

**RACK (Curb Rack)** *Picture*
A gear rack around the *Curb*. A pinion gear driven by the *Fantail* engages with this to turn the *Cap.*

**RED OXIDE**
Used on the *Staff* to test the level of a *Millstone's* face. (No longer used as it is poisonous.)

**REEFING**
The same as the nautical term for reducing the area of canvas sail.

**REEFING GALLERY** *Picture*
The broad *Gallery* around the outside of the windmill at the *Meal Floor* level where the *Sails* are *reefed* or unfurled. When *Patent Sails* are used instead of canvas, it is where the *Striking Gear* is adjusted.

**REIN IRONS** *Picture*
Links that join the *Spider Cross Irons* to the *Triangles*.

**RUBBING BURR**
Piece of hard stone used to rub off the high places of a *Millstone*.

**RUNNER STONE** *Picture*
The upper revolving *Millstone*.

**SACK LOADER** *Picture*
Installed in the edge of the *Reefing Gallery* to aid the loading of sacks onto carts drawn up below.

**SACK HOIST** *Picture*
Raises sacks to the upper floors.

**SACK ROPE (or chain)**
Used with the *Sack Hoist*.

**SAILS** *Picture*
Utilise the wind pressure to drive the machinery.

**SAIL BARS** *Picture*
Crosswise bars of the sail frame.

**SECONDARY BEVELS** *Picture*
A pair of bevel gears at the base of the *Fantail* drive shaft.

**SHEER BEAMS** *Picture*
The main cross bearers passing fore and aft under each floor. (See also *Cap Sheers*).

**SHOE** *Picture*
Feeds grain from the *Hopper* into the *Eye* of the *Millstone*.

**SHOT CURB** *Picture*
A *Curb* with two iron channels and rollers, upon which the *Cap* sits and revolve. (Some mills use other roller systems, or skids.)

**SHUTTERS** *Picture*
Open and close in the same manner as a Venetian blind in the *Bays* of *Patent Sails*.

**SHUTTER BAR** *Picture*
Connects the *Shutters*.(See *Working Uplong*)

**SKIRT**
The outer section of a *Millstone*.

**SMOCK MILL**
A wooden tower with a *Cap* that turns to face the wind. Named after the shape of the garment worn by farm works in earlier centuries.

**SPIDER (SPIDER CROSS IRONS)** *Picture*
Spider like arms at the axis of the *Sails*, which are connected to linkages that operate the *Shutter Bars* of *Patent Sails*.

**SPRATTLE BEAM** *Picture*
Carries the upper bearing of the *Upright Shaft*. At Upminster this can be moved to disengage the *Wallower* gear from the *Brake Wheel.*

**STAFF**
Used to test the surface of a *Millstone* for high spots.

**STAGE**
A *Gallery*.

**STEELYARD** *Picture*
A long lever for *Tentering* the *Millstones*, operated by the *Governor*.

**STOCK** *Picture*
The main timber that is held by the *Poll End*, and supports the *Sails*.

**STONE CASING** *Picture*
Casing surrounding the Millstones. (See *Vat* and *Tun*)

**STONE DRESSING**
Re-cutting the furrows in the grinding face of a *Millstone*.

**STONE FLOOR** *Picture*
The floor upon which the *Millstones* are situated.

**STONE NUT** *Picture*
The gear wheel that drives the *Stone Spindle*. The *Stone Nut* engages with the *Great Spur Wheel*.

**STONE SPINDLE** *Picture*
Supports and turns the *Runner Stone*.

**STORM HATCH** *Picture*
Allows access to the *Poll End* from within the *Cap*.

**STRIKING GEAR**
The entire mechanism for adjusts the *Shutters* of *Patent Sails*.

**STRIKING RACK** *Picture*
A rack and pinion assembly operated by the *Y-Wheel* to move the *Striking Rod.* (Image: as viewed from overhead)

**STRIKING ROD** *Picture*
Passes through the *Wind Shaft*, from end-to-end, to actuate the *Shutters* of *Patent Sails*.

**STUMP IRON** *Picture*
The support iron for a *Triangle* in a *Patent Sail* mechanism.

**SWEEP** *Picture*
Southern name for a *Sail*.

**TAIL WIND**
Wind coming from behind the *Sails*.

**TENTERING GEAR**
General expression for the *Bridge Tree* and associate components that adjust the gap between the *Millstones*. (See page 7)

**TENTERING SCREW** *Picture*
Allows fine adjustments to be made by hand to the height of the *Bridge Tree*, and therefore the gap between *Millstones*.

**THRIFT** *Picture*
Handle which holds *Mill Bills* and *Picks*.

**TOLL**
The taking of some flour or meal in payment for grinding.

**TRIANGLES** *Picture*
Cranks which operate the *Striking Gear* of *Patent Sails*.

**TUN** *Picture*
Alternative name for a *Vat*. The casing which encloses the *Millstones*.

**TWIST PEG** *Picture*
Adjusts the angle of the *Shoe*. A cord supporting the *Shoe* passes over guides, and then is wound around a *Twist Peg*. Turning the peg raises or lowers the *Shoe*, regulating the flow of grain.

**UNDER-DRIFT**
*Runner Stone* is driven from below.

**UNIVERSAL JOINT (UJ)** *Picture*
This connects the upper and lower sections of the *Upright Shaft*, overcoming alignment problems, and permitting the *Wallower* to be disengaged from the *Brake Wheel*. It is an unusual feature in windmills.

**UPRIGHT SHAFT** *Picture*
The main shaft that passes through several floors of the mill to drive the machinery.

**VANE**
Alternative name for a *Shutter* or *Fan* blade.

**VAT** *Picture*
The casing which encloses the *Millstones*.

**WALLOWER** *Picture*
The bevel gear driven by the *Brake Wheel* (on the top section of the *Upright Shaft* above the *Universal Joint*).

**WEATHER** *Picture*
The twist of a *Sail*. The end nearest the axis has more twist than the outer end of the *Sail*.

**WEATHER BOARDS** *Picture*
Timber planks that cloak the outside of the windmill. They are wedge shaped in cross section (feathered) to allow them to be overlapped easily.

**WHIP** *Picture*
The main timber of a *Sail*, which forms the spine between the leading and trailing *shutter* panels.

**WINDING**
Turning the *Sails* to face the wind.

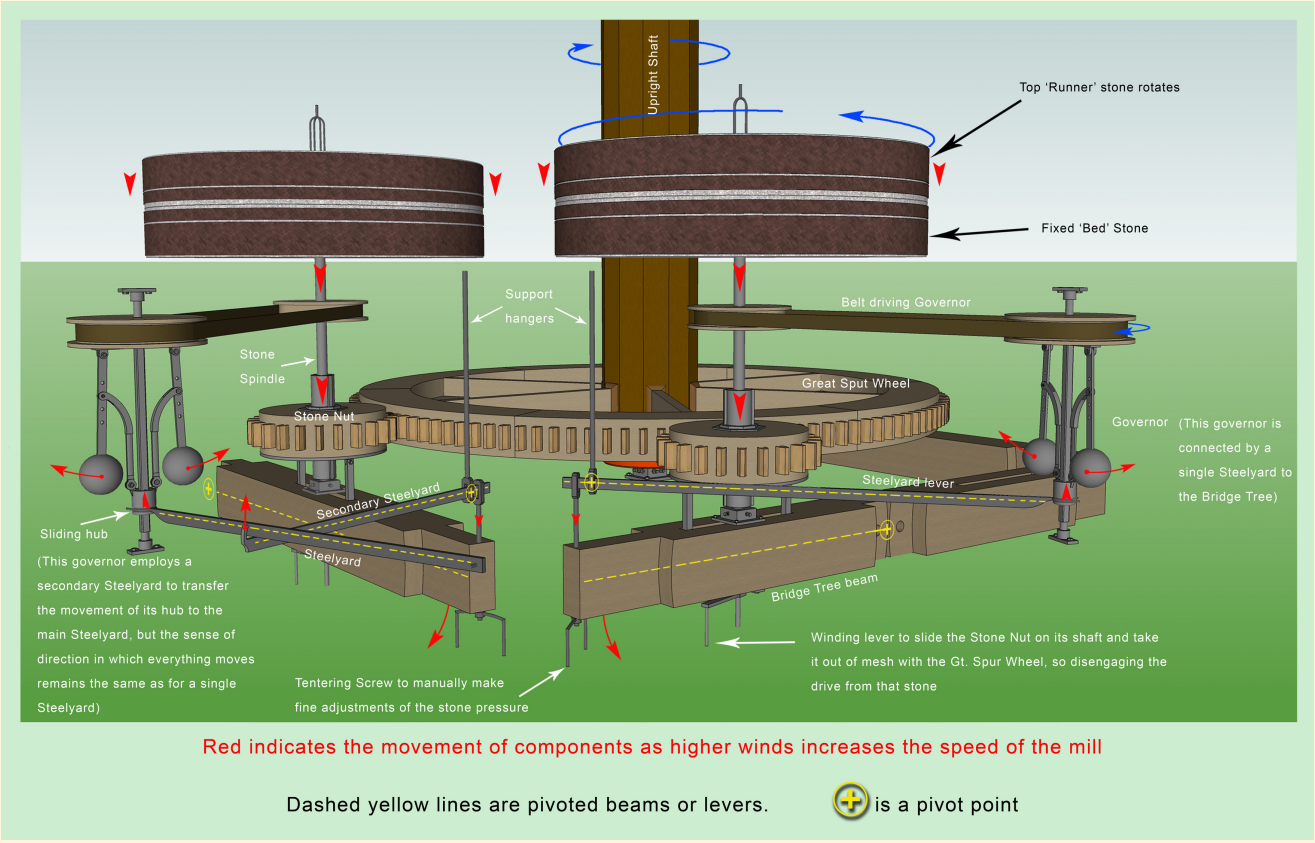
**WIND SHAFT** *Picture*
The main axle of the *Sails*. (Cast iron)

**WIRE MACHINE** *Picture*
Type of flour *Dresser* which uses wire mesh to grade the meal.

**WORKING UPLONG** *Picture*
Rod that connects the *Shutters*, so they can be adjusted together. (See *Shutter Bar*).

**Y-WHEEL (Rope Wheel)** *Picture*
A wheel with Y-shaped forks around the rim which give a rope (or chain) increased grip. Such a wheel is attached to the *Striking Rack* to adjust the *Shutters*.

## TENTERING GEAR




### HOW THE GOVERNORS ADJUST THE PRESSURE BETWEEN MILLSTONES

For clarity, only two of the four millstones are shown, and supporting timber work is omitted. Levers and beams that are pivoted are marked with a yellow dashed line, with a cross to show the pivot point.

The top millstone (Runner) is supported on a shaft (Stone Spindle) which is driven by a pinion gear (Stone Nut), and the entire assembly rests on a stout timber cross beam (Bridge Tree) that is pivoted at one end.

When the wind increases the speed of the sails, the ball weights of the Governor fly outwards, raising its sliding hub, which in turn lifts the long end of a lever (Steelyard). The short side of the lever thus drops, and as it is attached to the Bridge Tree, that end of the Bridge Tree is let down a small amount.

The action of lowering the Bridge Tree therefore lowers the Runner Stone, and hence the pressure between the pair of millstones is increased.

When the wind drops, less grain enters the stones, so the pressure between them must be decreased. Also, should the Runner Stone stop revolving entirely, the stones must be held apart to prevent them binding, otherwise restarting would be difficult. Therefore, when the sails slow down the Governor weights fall back, lowering the long end of the Steelyard, raising the Bridge Tree and Runner Stone in the process.

*Compiled March 2013 by Cliff Featherston, member of The Friends of Upminster Windmill.*
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