# STOATES MILL

**Stoates Mill was built in 1832, replacing Little Silver Mill which was situated upstream. Stoates and Sons further expanded the mill in the mid nineteenth century, making it important to the prosperity of Watchet with ships importing grain and exporting flour and bran. By then it had ten pairs of water-driven grinding stones. In 1885 a steam engine and water turbine were added. In 1903 a new turbine was installed, but in 1911 a disastrous fire damaged so much of the building that Stoates closed the mill and moved their activities to Bristol. In 1916 the derelict mill was taken over by the Exmoor Paper and Bag Company who purchased the paper bag plant that was formerly operated by the Wansbrough Mill. This company closed in 1977 and the buildings were occupied by a number of other firms, most significantly Watchet Products Fancy Goods Ltd which was founded in 1978, making products of Melamine. Watchet Products vacated the buildings in 2008. Planning consent was granted in 2013. Work commenced on the conversions in 2016 and was completed in 2018. The refurbishment was undertaken by local tradesmen and contractors.**

WATCHET CONSERVATION SOCIETY

**www.watchetconservationsociety.co.uk**

## The Gilkes Vortex Turbine

The history of water power extends for over 2000 years with the use of water wheels. Stoates Mill was powered by this traditional method until 1927 when A Gilkes 'Vortex' turbine was installed. It was rated at 45HP turning at approximately 200 RPM to drive the electrical generator to power the works. Of the many turbines designed, the 'Gilkes Vortex' (Gilbert Gilkes of Kendal, Cumbria) was the most favoured machine and they manufactured them at their factory from the 1890s to the 1920s. The company exists to this day. A working turbine powering a saw mill is at Simonsbath under the control of the Exmoor National Park.

## Engineers Handbook 1915

This Turbine (Gilbert Gilkes & Co. Ltd.) has been applied on falls ranging from 3 feet to 500 feet. It consists of a movable wheel with radiating vanes, and is surrounded by an annular case, closed externally, but having towards its external circumference four or more curved guide passages. The water enters the casing at the branch **A**, which branch can be set in any part of the circumference as most convenient, and, issuing through the guide passage acts against the vanes of the wheel, which is thus driven round at a velocity depending upon the height of the fall. The water, having expended all its force, passes out at both sides of the wheel and through the suction bends **B B**. The wheel is therefore in equilibrium and the end-thrust inevitable in a single discharge turbine is thus avoided. The guide blades, which are shown in dotted lines in **Fig. 01**, are movable a hand wheel and worm gear.

**Fig. 01**

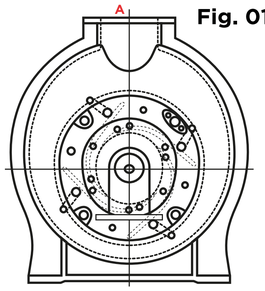
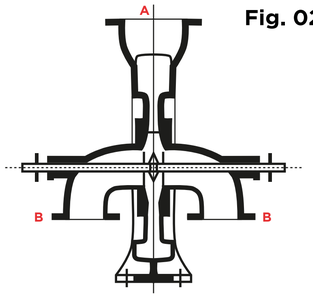



**Fig. 02**




The turbine may be placed at any height, less than 25 feet, above the tail-race, the fall below the wheel being rendered available by suction pipes descending from the central discharge orifices into the tail water. Frequently this admits of the placing of the Vortex in a position more convenient for the application of the power than at the bottom of the fall.

In **Fig. 02** is shown a portion of the revolving wheel of the Vortex on an enlarged scale, to show the form of the vanes. Some of the vanes do not extend to the central orifice; the object in so making them is, that they may not too much fill up the contracted part of the of the passages, and thus impede the flow of the water.

An advantage in the Vortex wheel which must not be lost sight of is, that when applied in driving machinery subject to much variation in the power required, the centrifugal force increases, and checks the water-supply, and vice versa—thus counteracting the irregularities of speed arising from variations in the work to be performed.

WATCHET

SCRATCH THE SURFACE