

Elm Street Mill Engine

This steam engine was made by Galloways Ltd of Manchester in 1926. It was installed in Elm Street Mill, Burnley, and worked there until 1967, when the factory closed down. It is an example of a cross-compound horizontal condensing engine. The high- and Low-pressure cylinders are placed side by side. This contrasts with the Firgrove mill engine, where the two cylinders are positioned one behind the other in tandem. From the 1920s onwards, many mills began to convert from steam power to electric power, with each machine in the mill having its own electric motor. This meant that large mill engines were no longer needed for driving machines. As a result, this was the last new reciprocating steam engine to be supplied to a cotton mill and represents the peak of mill engine technology at that time. The flywheel could accommodate 18 driving ropes. It was donated to the Museum in 1970 by Mr B. Melland, a relative of the original owner of Elm Street Mill.



The rotational speed of this engine is 125 revolutions per minute, too fast for the steam to be controlled by slide valves or Corliss inlet valves. Therefore, the high- and low-pressure cylinders both have drop-inlet valves to control the admission of steam to the cylinders. Another important feature is the Uniflow low-pressure cylinder, where steam enters the ends of the cylinder alternately via the drop-inlet valves and passes out through a ring of ports in the middle. This is thermodynamically efficient because there is no alternate heating and cooling of the cylinder ends through steam being also exhausted through them.

Technical Data

Engine type	Cross-compound horizontal condensing engine
Manufacturer	Galloways Ltd, Manchester
Date of manufacture	1926
Operator	W. Melland, Elm Street Mill, Burnley
Rating	600 horsepower
Speed	125 rpm
Cylinder	21-inch (530-mm) and 36-inch (915-mm) bores
Steam pressure	150 p.s.i.
Valve type	First stage – drop-inlet valves and piston exhaust Second stage – drop-inlet valves and Uniflow cylinder
Flywheel	Weighs 12 tons; 9-foot (2.74-metre) diameter

For more information:

<i>Read</i>	Hayes, G. <i>Stationary Steam Engines</i> . Princes Risborough, UK: Shire Publications, 2003.
<i>Visit</i>	Trencherfield Mill, Wigan Pier, Wigan. Bancroft Mill, Barnoldswick, Lancs. How Steam Engines Work: www.mgsteam.btinternet.co.uk