

134-year-old Patent

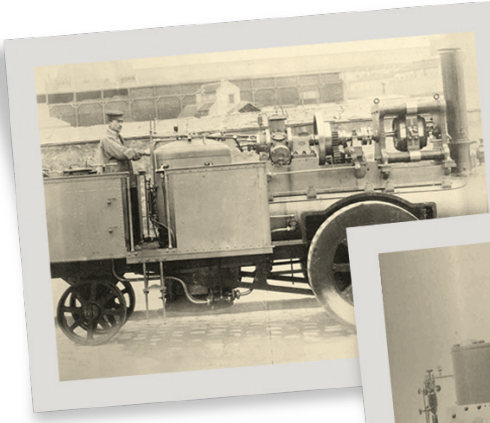
UNCOVERED

Editor's Note: As reported in September 2008, Dresser-Rand acquired certain assets of Peter Brotherhood Ltd, located in Peterborough, United Kingdom. Established in 1867, Peter Brotherhood specialized in the design, manufacture and installation of steam turbines and reciprocating compressors, with equipment installed in more than 100 countries around the world.

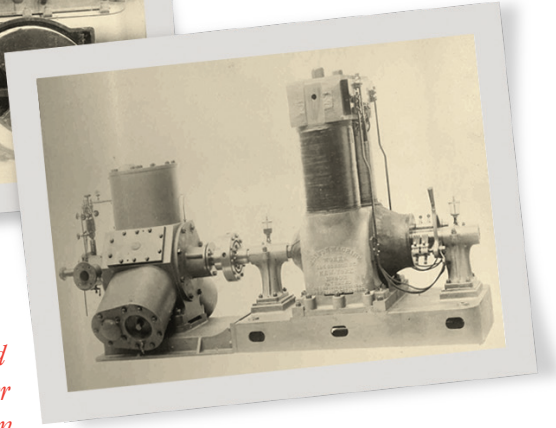
“In accordance with the decree of his majesty Emperor Aleksander Nikolaevich, All-Russian Czar, privilege (is granted) to a foreigner Mr. Peter Brotherhood for improvement of engines and pumps with three cylinders.”

So asserts the privilege (patent) given to Mr. Brotherhood in November 1875 for “improvement of engines and pumps with three cylinders.” The patent, recently uncovered by Dresser-Rand employees in Peterborough, UK, was originally awarded for a period of 10 years and the inventor was assessed a fee of 45 rubles. This was one of many patents taken out worldwide to protect the intellectual properties of the three-cylinder engine.

Mr. Brotherhood invented his famous three-cylinder radial engine in 1872. It was the first successful high-speed steam engine that could be coupled directly to a dynamo (original name given to electric generators), saving space and increasing efficiency.



Steam tractor for French military driven by a three cylinder Brotherhood engine (also capable of generating electricity) with Peter Brotherhood at the controls.



Electricity generating set with a piston valve three-cylinder engine driving an Edison dynamo.

The engine was first exhibited at the Agricultural Hall in London and then at the Vienna Exhibition of 1873, where it created considerable interest among attendees on both counts. The engine became a popular product in a short time. And why wouldn't it? It started instantly from any position and ran at high speeds with no vibration. The engine could be arranged for cut-off at any degree of expansion and could be fitted with reversing gear. Steam admission was achieved by a simple rotating balanced disc valve or by piston valves.

Among some of the more popular uses for the Brotherhood three-cylinder engine in the late 19th century was driving ventilation fans and generator sets used for powering carbon arc searchlights installed on many of the British and other ships of that century. Because it could run on compressed air, the three-cylinder engine was also used for powering torpedo propellers.

More recently (1980s), the three-cylinder engines were used to open coke oven doors at Ravenscraig Steelworks in Motherwell, UK. These were probably the last reciprocating steam engines supplied to British industry. Because of its popularity, a representation of the three-cylinder engine became Peter Brotherhood's international trademark for several decades. ■