Charles Wallace Chapman and His Family

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Introduction

Charles Wallace Chapman (4 August 1897 – December 1979) was the engineer who designed the first diesel engine light and fast enough for cars, vans and tractors. He co-founded Perkins Engines in 1932, which grew into one of the world's largest diesel makers and is now part of Caterpillar.

In engineering circles he is often called the father of the modern diesel engine. Yet his partner Frank Perkins gave the company its name, and Charles has been described as the forgotten genius behind it.

Early life and the Navy

Charles was born in Lancaster and grew up at 'Ivy House', the son of James Chapman.

He went to Lancaster Royal Grammar School, then served an apprenticeship with Vickers at Barrow-in-Furness. In the First World War he was a lieutenant in the Royal Naval Volunteer Reserve, working on anti-submarine projects.

After the war he studied at the University of Liverpool and was awarded an M.Sc. in engineering in July 1924.

Family and homes

Charles married Eleanor on 28 July 1925 at St Mary's Roman Catholic Church in Lancashire. They had a son and a daughter.

Period	Home
Childhood	'Ivy House', Lancaster
Early 1930s	Strood, Kent — where the first Perkins engine was sketched
From the 1940s	'The Stables' and 'Briar Cottage', Church Road, Burstow, Surrey
Later life	'Chapel Plat', Hiham Green, near Winchelsea, East Sussex

In Burstow the couple were active in the local community, and Charles hosted events for local groups including the WI.

Charles died at Hiham Green in December 1979, aged 82, and Eleanor died there in 1983.

Founding Perkins Engines

Charles and Frank Perkins founded F. Perkins Ltd on 7 June 1932 in Queen Street, Peterborough, after their previous employer, Aveling & Porter of Rochester, collapsed in the Depression. Frank was chairman and the businessman; Charles was technical director.

In the 1920s Charles had been personal assistant to Sir Ernest Petter at Petters in Ipswich, and he first met Frank in 1929.

The problem they solved. Diesel engines of the time were heavy and slow, fine for ships and power stations but too sluggish for road vehicles. To match a petrol engine's speed, the fuel had to be injected, ignited and burnt within about a thousandth of a second, which was thought impossible.

Charles cracked it with a new combustion chamber and fuel injector that fired a small amount of fuel first to start the flame. The design became known as the Perkins Aeroflow system and stayed in use until the late 1970s.

The first run. The two men sketched the first design on scraps of paper at Charles's home in Strood. The prototype first ran on 3 December 1932 in front of the whole company. It raced to 3,000rpm and had to be shut down quickly because the test rig was overheating. Charles had wanted to test a single-cylinder model first, but Frank pushed to go straight to a full engine to save time and money.

That engine, the Vixen, won an engineering heritage award in 2009. Charles also led the design of the later P4 and P6 engines, and in 1935 Perkins became the first company to hold six world diesel speed records.

War work, leaving Perkins and later life

In the Second World War Charles designed the Perkins S6 marine diesel, which powered the Royal Navy's air-sea rescue craft, and carried out work for the Air Ministry. The Navy's need for reliable diesels for small craft helped put the young company on a firm financial footing.

He resigned from the Perkins board in 1942 to concentrate on the war effort. When the firm went public in 1951, his shares earned him only a small fraction of what the Perkins family received.

Twiflex. In the 1950s Charles ran a coupling maker in Twickenham that became Twiflex Couplings Ltd. At its peak it employed 900 people.

Writing. Charles wrote a standard engineering textbook, two novels about boardroom life, and a memoir of his Perkins years that was never published.

Book	Published	About
Modern High Speed Oil Engines	Caxton, 1949, in three volumes; second edition 1955	A textbook on high-speed diesel engines, with chapters on road, rail, air, marine and farming uses. It became standard reading for engineering apprentices and students
The Directors Dinner	Ward Lock, 1964	A novel about boardroom life, featuring Sir Ernest Stark of Stark Engineering Ltd
The Boardroom Battle	Ward Lock, 1965	A second novel about boardroom life
The story of Perkins diesels	Unpublished, written around 1962–63	His draft memoirs of the Perkins years, later quoted by a University of Manchester historian

Perkins Engines after Charles

The company Charles co-founded with a sketch on scrap paper was bought by Caterpillar in 1998 for US$1.325 billion, which Caterpillar claimed made it the world's largest diesel engine maker.

Early customers. Perkins engines were first fitted as standard in the Commer van. By the Second World War the company was strong enough to play a major part in the war effort, and by 1951 it was the world's biggest producer of diesel engines in its class.

On the road. In the 1950s and 1960s Perkins engines were popular in taxis and commercial vehicles across Europe, and were fitted as standard in Jeeps and Dodge trucks in the United States.

On the farm. Perkins' biggest customer, Massey Ferguson, bought the company in 1959, though Perkins kept its own name. The hugely popular Massey Ferguson 35 tractor ran on a Perkins diesel.

Today. Perkins builds engines for farming, construction, power generation and boats, with factories around the world. Part of the A1139 through Peterborough is named Frank Perkins Parkway in honour of Charles's partner.

Perkins engines and veterinary life

No record found links Charles himself to veterinary work, but the engines he designed became part of the everyday world of animal care, especially on the farm.

Rooted in farming. Both founders came from farming and agricultural engineering. Frank Perkins came from a family of agricultural engineers, helped develop dairy machinery, and kept a small farm near Peterborough for the rest of his life.

The tractor in the yard. From the 1950s the farms that rural vets visited were increasingly worked by diesel tractors, including Perkins-powered models such as the Massey Ferguson 35. Charles's lightweight high-speed diesel helped bring diesel power to smaller machines like these.

The mixed practice era. For much of the 20th century, country vets treated farm animals, horses, dogs and cats alike, travelling between farms where diesel machinery had replaced the horse.

Keeping the lights on. Today Perkins is a major maker of diesel generators. Standby generators like these keep power running when the mains fails, something any round-the-clock practice relies on for theatres, kennels, fridges and incubators.

Timeline

Date	Event
1897	Born in Lancaster

Date	Event
1914–1918	Serves in the Royal Naval Volunteer Reserve
1924	M.Sc. in engineering, University of Liverpool
1925	Marries Eleanor McKeown
1932	Co-founds Perkins Engines in Peterborough; the first engine runs that December
1942	Resigns from the Perkins board for war work
1949	Publishes *Modern High Speed Oil Engines*
1964	Publishes *The Directors Dinner*
1965	Publishes *The Boardroom Battle*
1979	Dies near Winchelsea, aged 82
2009	First Perkins engine wins an engineering heritage award

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