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Abstract

Gottlieb Daimler, a German mechanical engineer, took the invention of the internal combustion and made many improvements to the engines that are still in use to this day. He made a team with the inventor of the internal combustion engine, Nikolaus Otto and an engine builder and innovator, Wilhelm Maybach. Daimler started off working for Otto at his company called Deutz Gasmotorenfabrik as a technical director. He later left that company with Maybach and they started to work together on an engine of their own called the Grandfather Clock because of the way the engine looked. The engine put out the most power at lower rpm’s than any other engine of the day. He first mounted the motor on a wooden bike frame to produce the world’s first motorcycle. Then months later Daimler and Maybach attached a slightly bigger engine to a horse carriage to make the world’s first automobile. It took a few years for the creation of their own car without the use of a horse carriage, but in 1889 Daimler made his first car and made an emblem of a three point star which is known as the Mercedes Benz Company.

The Invention of the Internal Combustion Engine

The internal combustion engine was a work in process for many years in the later 1800’s. Many mechanical engineers for years tried to develop a machine that could move people without the use of animals. Of these many great engineers was Gottlieb Daimler, a German mechanical engineer, who revolutionized the internal combustion engine forever.

Daimler was not the inventor of internal combustion engines but he improved it with his team of Nikolaus Otto, the pioneer of four-stroke engines, and Wilhelm Maybach, who made engines small, lightweight, and fast-running (Gottlieb Daimler). In 1972, Gottlieb worked as a technical director for Deutz Gasmotorenfabrik where he insisted on the most intense and particular precision with the engines being made, that he made a system of inspections for the motors being distributed (Gottlieb Daimler). After a few months of running they were making two engines a day, which in the time was an incredible feat, but despite the success Daimler was not happy. The reason of this was that he wanted to spend more time and money on research and development of the engine, but Otto wanted to produce more engines, so Gottlieb left the company.

In 1882, Gottlieb Daimler got a house in Cannstatt where he built an experimental workshop for him and Wilhelm Maybach to design and test their ideas in. After a year of intense testing, Daimler was approved for Patent 28022, which is for an uncooled, heat insulated engine with unregulated hot-tube ignition (Zeleznik). Thanks to his invention of the hot-tube ignition that in 1883 his experimental engine ran for the first time. The engine had a displacement of roughly 100 cc, it had an output of 0.18 kW at a sensational 600 rpm, significantly more than the usual 120 rpm for gas engines in the time period (Stuttgart). The experimental engine was compact and light, and therefore suitable for use not just as a stationary engine, but also more importantly for mounting in vehicles.

The improved version of the engine that followed saw it converted from a horizontal to a vertical positioned cylinder – called the “grandfather clock”. This engine formed the basis for the patent registration DRP 34926 in 1985 (Zeleznik). The “grandfather clock” had an enclosed crankcase, on which stood the air-cooled cylinder. The intake valve, known as a snifting valve, opened and closed automatically with the aid of vacuum pressure; the exhaust valve was operated by a curved groove control invented by Daimler, which also kept the revolutions in check.

The specifications for the engine featured a single vertical cylinder of 264cc (16 cu in) (58×100 mm, 2.28×3.94 in), air cooling, large iron casting flywheel, hot tube ignition system, cam operated exhaust valves which allowed high speed operation, .5hp (370 W), 600 rpm running speed, weight around 110 pounds, and about 30 inches tall (Georgano). At first they initially put the engine on a wooden framed bicycle to create the world’s first motorcycle called the “Reitwagon”.

On March 8, 1886, Daimler and Maybach secretly brought a stagecoach into the house, telling the neighbors it was a birthday gift for Mrs. Daimler. Maybach supervised the installation of a larger 1.1 hp, 462 cc (28 cu in), (70×120 mm, 2.76×4.72 in) version of the Grandfather Clock engine into this stagecoach and it became the first four-wheeled vehicle to reach 16 kilometers per hour (10 mph) (Georgano). This device was the world’s first four-wheeled automobile.

Later in 1887, Daimler invented the first power transmission to add to his car (Stuttgart). This made it possible for you to be able to go different speeds instead of having two speeds to choose from. How this worked was he had the engine’s belt pulley drove pulleys of different sizes on a through drive countershaft. Sprockets on either side of the motor drove the sprockets attached to the rear wheels, therefore driving the vehicle. He also installed a friction clutch to both sides of the through drive countershaft to the motor to ensure smooth transitions from gear to gear.

In 1889, Daimler and Maybach invented their first automobile that was not altered from a horse drawn carriage. Their design was based on motorcycles for their small body and light weight. This motor had a lot more specifications than the old Grandfather Clock. They called this car The Steel Wheel Automobile. The Steel Wheel Automobile had a high speed four-stroke petrol engine, fuel vaporation instead of fuel injection, two cylinders in the V-shape, mushroom shaped valves, water cooled, four-speed sprocket gearbox, and pioneer axel-pivot steering system (Wernle).

In conclusion, Gottlieb Daimler was one of the few most influential and innovative people for the creation of the internal combustion chamber engine. As you have read, his designs and ideas made it possible for so many new aspects of the engine to be put into application and is still even being used today. His creativity and passion for the invention of the engine and his vision to make an engine powered vehicle the best, made him the pioneer of the most used and important invention of the 19th and 20th centuries.

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