product. They did not make their components in-house, but contracted out business to parts suppliers, from whom they demanded the highest standards. Henry Leland of Cadillac was quality's standard-bearer. He demanded identical, interchangeable parts from his suppliers, whose tolerances were measured to the hundred-thousandth of an inch. But Leland's creed did not stop there. Each employee checked every component as it was received to ensure it was defect free, creating the first quality-assurance program in the automotive industry.

Second, American manufacturers perceived their market differently from Europeans. Because their market was potentially huge, they reckoned that cars could be sold cheaply, and profit mac on volume. In 1900, Ransom E. Olds commissioned his Jefferson Avenue staff to produce a runabout car (the first Oldsmobile) that he sold for $625, making his return by mass production.

Later, Henry Ford introduced the moving assembly line at Highfield Road, slashing car productic time, and enabling him to offer a high class car at unprecedentedly low cost. Interchangeable parts, mass production and the assembly line would allow America to dominate world automobil production for decades to come.

Perfect Circle

Established by Charles Teetor in Hagerstown, in 1895, as the Railway Cycle Manufacturing Company, Perfect Circle was one of many companies that started serving a non-automotive transport industry before realizing the future was with automobiles. Studebaker, for example, wa a world-renowned builder of horse carriages before it ever designed a car. Olds made steam engines. The Duryea brothers, builders of America's first car, made bicycles, while Henry Lelan made bicycle gears.

Charles Teetor began in similar fashion, designing and manufacturing a pedal-powered vehicle use on railroad tracks. The Teetor cycle was an immediate success, and was soon being export around the world. By 1907, the company was making a wide range of products, including piston cylinders and piston rings.

In 1918, confident of the future of its piston-ring business, the Teetor-Hartley Motor Company sc off all other areas of the company and renamed itself the Indiana Piston Ring Company. In 1921 it introduced the brand name Perfect Circle, and in 1924, it changed its company name once again, this time to Perfect Circle. In 1963, Perfect Circle became part of the Dana family.

Dana Distribution Europe

Dana Distribution Europe was founded in London in 1889 as a cycle dealership called Brown Brothers. The business grew briskly, and soon the company was distributing cycle parts in Grea Britain, Spain, France and Portugal. In 1898, Brown Brothers opened a separate department to supply parts for cars, motorcycles and related equipment. Later it became involved in the aviatic business, supplying parts to pioneer aviator Colonel S.F. Cody and setting up a factory to produ precision aircraft components.

After World War I, Brown Brothers merged with Scottish based James Thomson & Sons, and opened branches in many leading British cities, supplying a wide range of motor, electrical and hardware goods. In 1964, the company determined to focus on its core business, which was no supplying the motor trade, and gradually closed its main branches in favor of smaller, concentrated motor suppliers. In 1973, Dana took an interest in Brown Brothers, and in 1981, Dana acquired all of its outstanding shares.

Spicer Europe

Founded in Wolverhampton, England, in 1902, as Thomas Turner & Co, Spicer Europe began b building bicycles, tricycles and horseless carriages, including the Turner-Meisse Steam Car. In 1907, the company began to design and manufacture petrol-engine vehicles. After World War I, the company established a reputation as a components suppler.