was situated near the heart of the early automotive industry. Besides, Spicer already had relativ in Plainfield, connected with the Potter Printing Press Company.

At first, he contracted Potter to manufacture his universal joints, until Potter received a huge ord for printing presses and could no longer help. Spicer then rented a corner of their plant, hired three employees, and began manufacturing the joints himself. In 1905, as orders kept coming ir he incorporated the Spicer Universal Joint Manufacturing Company.

The history of the universal joint

Jerome Cardan, an Italian mathematician born in 1501, is credited with discovering the principle the universal joint, a coupling that allows angular motion in all directions, and the transmission c rotary motion. The first practical application of his idea, however, was made by Robert Hooke, a seventeenth-century English experimental philosopher. Hooke's design was so efficient and reliable that Clarence Spicer remained faithful to its essential principles when he designed his o joint more than two hundred years later.

In its earliest days, the joint had limited use. In 1675, Isaac Newton contrived a universal joint o which to mount his telescope. Other early applications included compass and gun mountings, d spindles and some agricultural machinery. However, it was not until the advent of the internal combustion engine, the growth of the motor car industry, and Spicer's patent that the universal joint truly came of age.

The World War I Liberty Truck

The advances in mechanized transport that had been achieved by the first World War meant thi armies could be supplied and moved more quickly than ever before. Yet the variety of trucks being used created a logistical nightmare. Staff had to stock every conceivable size of bolt, nut and screw, and be familiar with the workings of all the different engines.

In 1917, Clarence Spicer was one of a group of engineers and industry leaders summoned to Washington to solve the problem by designing the best possible standardized truck. At first the group was reticent. The engineers were accustomed to being rivals, and were reluctant to share their secrets with each other; but they soon got into the spirit, and competed to see who could contribute the most. The result was the Liberty Truck, rugged, easy to maintain and equipped w interchangeable parts.

2nd Vignette

The early transport industry

That Clarence Spicer's universal joint was in demand before was even manufactured testified to both the quality of its design and the healthy state of the automotive industry in 1904. After their slow start, American automobile manufacturers had caught up with and even passed their European counterparts. The car proved perfect for the Unite States: Americans loved new technology, and they loved to travel. As a growing, thriving country, mobility was a way of life, not a luxury. Also, the oil fields discovered at Spindleto Texas, in 1901, provided an enormous source of cheap fuel.

Maybe the greatest difference between Europe and America, however, was the attitude of car makers to their work and their customers. In Europe, motoring was not viewed as a means of mass transport so much as an expensive hobby. Cars were custom-built; there were few economies of scale and costs were high. Because cars were expensive, the market for them remained small.

By contrast, American manufacturers were systematic, specialized and eager to improve their