Inventors who Revolutionized the Textile Industry

John Kay (1704–1780): Inventor of the Flying Shuttle

Because his father owned a wool manufacturing mill in England, John Kay began work as a supervisor in the mill at an early age, and worked to improve the complex process of preparing wool for spinning and weaving. He patented the flying shuttle in 1733. His device made it possible for weavers to produce fabric much more efficiently, more than doubling a weaver's productivity.

James Hargreaves (1721–1778): Inventor of the Spinning Jenny

Hargreaves was a spinner and weaver. He said that his idea for the spinning jenny came to him when his young daughter knocked over his spinning wheel. He saw that the spindle continued to turn, although it was now upright rather than in a horizontal position. This made him envision placing multiple spindles that could be rotated in this manner. He built such a machine and later began to sell them. Some of the hand spinners in his community expressed anger with him, because they saw his invention as a threat to their livelihoods. A group of them broke into his house and destroyed a number of the jennies he had built in order to sell. Hargreaves moved away and established a small mill, using spinning jennies to produce yarn.

Richard Arkwright (1732–1792)

Arkwright was a wig-maker and the son of tailor. In the mid 1700s, the fashion for wigs in Europe was declining. Arkwright was familiar with the machines and labor involved in weaving and spinning. Looking for a different source of income, and aware of the importance of recent inventions like the flying shuttle and the spinning jenny, Arkwright decided to seek his fortune by developing more inventions for the production of cloth. Arkwright worked together with a watch and clockmaker also named John Kay to create a new machine for carding wool. He then developed a horse-driven spinning mill and went on to develop mills where yarn was manufactured entirely by one machine. From there, Arkwright used Watt's steam engine to power a waterwheel, leading to the development of a mechanized loom.

Eli Whitney (1765–1825): Inventor of the Cotton Gin

Raised in Massachusetts, Whitney was the son of a wealthy farmer. He attended Yale from 1789–1792, where he learned about recent developments in science and technology. After graduation, Whitney moved to Georgia for a teaching position, but the offer fell through. Whitney was stranded with no source of income. However, he became friends with a wealthy plantation owner, Catherine Greene, and with the manager of her plantation. Through these connections, Whitney learned about the process of producing cotton. Knowing that English mills were demanding more and more cotton, Whitney saw how a labor-saving machine for separating seeds from cotton fiber would lead to enormous prosperity. Whitney developed his cotton gin and patented it in 1794. But others were able to easily copy his idea, and Whitney's plans to grow rich selling and servicing his machines did not come to fruition.

The Cotton Gin and Slavery

Cotton was an important business in the American South before the invention of the cotton gin. The use of enslaved workers meant that the labor-intensive process of growing, harvesting, and separating cotton was profitable to plantation owners. However, the cotton gin made this crop even more valuable. The use of enslaved workers in the South skyrocketed after the development of the cotton gin. Prior to Whitney's invention, the enslaved population in the South numbered about seven hundred thousand. The demand for slavery in the South had begun to decrease somewhat. Although slavery was still widespread at the end of the 1700s, the profitability of crops grown using enslaved workers had declined. Some slaveholders had begun to emancipate their enslaved workers, seeing them as a poor investment. The cotton gin, combined with the rising demand from cloth manufacturers, made cotton profitable again. Fifty years after the introduction of the cotton gin, the enslaved population had swollen to more than three million.

Worker Housing

Company towns

The phenomenon of company towns developed during the Industrial Revolution, when businesses needed workers to move into an area to work in a mine, mill, or factory. Company towns were communities built by businesses, in order to house workers. There was a range of conditions, with some company towns functioning almost like prisons, while others attempted to create attractive conditions in order to bring in more workers. In some company towns, workers were paid in scrip, rather than money, and thus forced to make all their purchases at the company store.

Poor Housing and Sanitation

In some cities, companies did not provide housing directly to workers. Rather, builders saw the opportunity to make a good profit from the heavy demand for inexpensive housing. They worked to construct housing quickly and cheaply. With few building regulations in existence, they were able to build in essentially any way they wanted to. Many workers were housed in cramped and poorly built lodgings. Workers' dwellings were frequently constructed using cheap materials, meaning that homes were often damp, cold, or poorly ventilated. Workers' housing was crowded, with dwellings built back-to-back or very close together. In the era before indoor plumbing, garbage and human waste was typically thrown outside. Although systems did exist for these piles of waste to be removed, landlords often cut corners by not having this removal done frequently. The lack of sanitation combined with the crowded conditions meant that cholera, typhus, and other diseases were a serious threat.