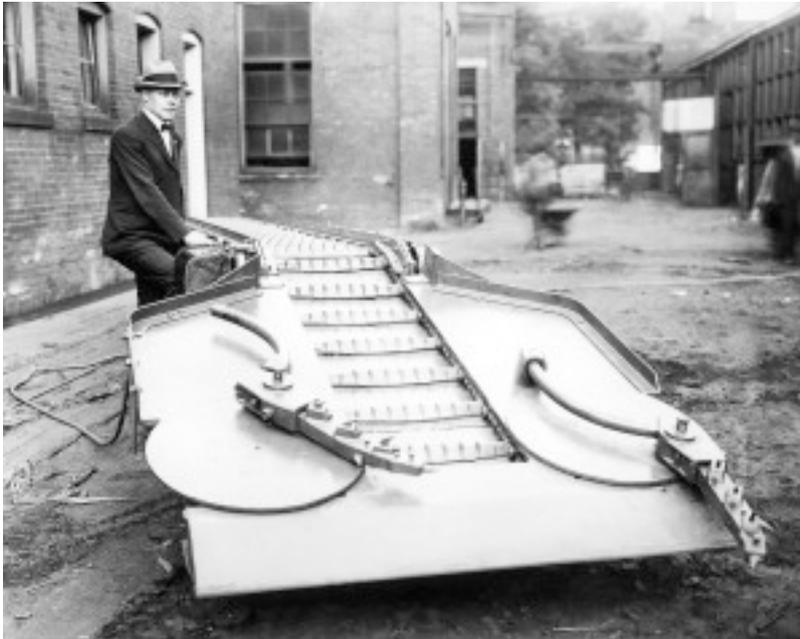


UNDERGROUND LOAD AND HAUL - Joe Joy



Joseph Francis Joy is inducted for the Joy Loader, but his achievements were many. His accomplishments are as remarkable as his tenacious nature and aspiring ambition. Born September 13, 1883, in the small mining town of Cumberland, Maryland. At the early age of 12, as his father and brother before him, Joy went to work at the nearby coal mine. He started as a slate picker, and by age 15 he was working underground as a face-miner using a pick and shovel. He would drill the face with a hand-held auger, charge the holes with dynamite to

“shoot down” the coal and then hand-load it into small rail-mounted cars pulled by mules or ponies.

This was hard, dangerous work for strong men, let alone a young boy. While lying on his side soaked in mine water, for long hours as he laboured, this bright young man visualized a “better way” to do the work. His family helped finance a correspondence course for him in mechanical engineering and on his 20th birthday, with the rare combination of his working knowledge, fortitude and specialized education, Joy produced his first sketch of a unique digging and loading device.

He proudly shared his idea with a close friend who later provided convincing evidence of Joy’s invention of a mechanical loader. His work in the mines continued and all the time, Joy attempted to convince others of his mechanical loading device invention. He circulated his drawing trying to persuade various mining companies to help him build his gathering arm loading machine. This marked the beginning of an uphill struggle to win his first of a total of 190 patents in his name. In 1913, at age 30, he took a lower paying job in exchange for the opportunity to work on the development of his machine. He was hired as an engineer for Jeffery Manufacturing Co where he spent his days in Pocahontas, Virginia, as a team member developing cutting and loading equipment which included the model 34A, 37A and 38A machines. At night, he continued to develop his gathering arm loader which he eventually presented to Jeffery management, to whom he tried to sell the rights to his machine. His offer was declined because his employer believed that Joy’s invention was not his own. They believed the machine already had been invented by a man named E.C. Morgan in 1910. Joy was not easily dissuaded. He took his invention to senior officer, John A. Donaldson, at the Pittsburgh Coal Co. He demonstrated his model on Donaldson’s desk using dry dog food as the loaded material to be conveyed. Donaldson was so impressed that he requested Jeffery to manufacture this machine. The first gathering arm loader was shipped to Pittsburgh Coal’s Sommer Number 2 mine on September 27, 1916. Joy applied for a patent for this gathering arm loader, and continued to work on its testing and development underground. He was

awarded a patent, in his name, for the machine in 1919. Jeery Manufacturing tried to claim rights to his invention.

This resulted in Joy leaving his position with the company and ultimately led to a patent lawsuit (which Joy successfully won in 1924). He then moved his family to Belle Vernon, Pennsylvania and with his patent in hand, went to work as a consultant to Pittsburgh Coal. He built five similar machines while working there, all of which were track mounted. Donaldson, while pleased with the progress of the machine, suggested placing it on crawlers to increase its flexibility. However, initial trials seemed unsuccessful and the crawler project was terminated. Joy viewed this project termination as simply another challenge and believed that he could develop a successful crawler. He also wanted to organize his own company to manufacture and sell his machines to the mines. In one of Joy's final consulting sessions with Pittsburgh Coal, Donaldson pointed out the importance of business capital. Donaldson provided assistance from Pittsburgh Coal's legal counsel and Joy began to organize his business. On June 4, 1920, the first crawler-mounted JOY loader was manufactured at Traylor Engineering in Allentown, Pennsylvania. Greater mobility proved itself, delighted Joy and promoted more interest in his machine. A major machine order was subcontracted by Joy to Charleroi Iron Works in Charleroi, Pennsylvania. The first model JOY 4B sold for \$2,800 in September, 1922, to the D. J. Kennedy Co which sold coal, bricks and building supplies. Soon the loaders were successfully operating in West Virginia, Illinois and Saskatchewan, Canada. By 1923, Joy was looking for a place to call his own; close to a progressive and productive mining area. He chose Evansville, Indiana. The model 4A, 4BU and 5BU ("U" referring to its underground application) were developed and manufactured at Joy's first commercial assembly plant there. While 184 4BUs were sold as the first commercial loading machines of their kind, the 5BU, was truly the forerunner of the modern loader, and the first with an articulated conveyor tail section. The first 5BU was manufactured in February, 1923 and installed in what is known today as Freeman Coal's Orient Number 1 mine in West Frankfort, Illinois. Financial difficulties related to rapid growth overwhelmed Joy. He overcame these problems, with help from Cobern Machine Tool of Cleveland, Ohio, and took over its plant in Franklin, Pennsylvania as Joy Machine Co with "full ownership of building and lands". In early 1924, the Indiana operation moved to Franklin. At that time, West Virginia and Pennsylvania coal fields were in rapid development and there appeared to be excellent potential for loaders. Operations began on March 1, 1924, and the Franklin plant became the first to bear Joy's name. One transplanted employee said, "We came here by car in April of that year and all you could see was hills. My mother took one look at the hills and said that she was taking the next train home!" Between the end of March and December 1, 1924, 186 loading machines were produced, all successfully incorporating "field proven" Joy developments. However, financial difficulties plagued the operation and a strike in the bituminous and anthracite coal fields of the area had disastrous effects. On April 2, 1925, Joy resigned as president, while a committee of creditors took steps to pay of \$500,000 of debt.

Joy's dramatic new project was halfway around the world: He became the Director of Mine Mechanization in the Donetz Basin in Russia (where it is interesting to note that a young miner who was named Nikita Khrushchev claimed that he ran a Joy loader at about this time). However, Russia was now under Stalin's rule and the area was turning into a political hotbed. In 1927, fearing for the lives of his staff and himself, Joy commandeered a railroad locomotive and escaped into Poland. When he returned to the USA, he pursued his life as an inventor, including working at Bethlehem Steel Co in Pittsburgh, Pennsylvania on the design of conveyor systems. Subsequently, he was hired as Assistant Vice President of Engineering at Marion Shovel Co in Ohio. In 1930, he founded and was president of the Joy Brothers Co where he developed a system of coal saws that could produce "block coal". Coal saw users at this time had an advantage in the domestic market until President Roosevelt set a floor price on slack coal of \$0.75/t. This prompted Joy to sell the company to Sullivan Machinery, who asked him to remain as General Manager of the Mining Machinery Division in Claremont, New Hampshire. In a four-year period, he helped to create nine new cutting machines along with the development of a "saw loader", which was basically a primitive continuous miner. Joy returned to Joy Manufacturing to assist it in another patent litigation against Jeery Manufacturing. As an engineering consultant in Franklin, he created the Joy Safety Coal Drill.

Had today's mine safety regulations been in effect, the machine would have been an instant success.

Later in WWII, Joy was called to service with the Army as a senior ordinance engineer and left in 1944, returning to Pittsburgh. He continued to consult in mine mechanization. Then A. S. Knoizen, Executive Vice President of Joy Manufacturing brought Joy back to the company that kept his name after its reorganization in 1928. In 1946, Joy Manufacturing awarded Joe Joy a lifetime contract at \$1,000 a month, plus materials and expenses, to develop new equipment and methods for the mining industry. Joy moved to Brookside Farms in Pittsburgh where he lived until moving to Ft. Pierce, Florida in 1954. In both locations he had a well-equipped machine shop and designers working for him. He died in February of 1957. He accumulated an impressive 190 patents during his career. His major inventions were recognized as milestones in the history of underground mining mechanization. He had pioneered new concepts in hydraulics, modern control and power circuits, trackless mining equipment, efficient gearing and seal designs as well as dozens of other 'firsts' in the industry. His contributions changed forever the way minerals are mined.