

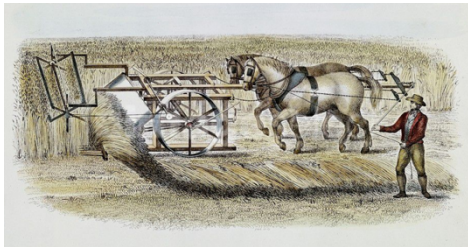
Cyrus McCormick Reaped What He Sowed

The oft-told story is simple enough. In 1831, 22-year-old Cyrus McCormick invented a mechanical reaper on his family farm in Rockingham County, Virginia. The reaper was powered by a single horse, the turning wheel powered the reciprocating cutting blades, and an enslaved man, Jo Anderson, raked the cut stalks off a platform onto the ground. An eye-popping statistic attests to the revolution the reaper wrought: to harvest 200 bushels of wheat in 1830 took ten hours; sixty-five years later 20,000 bushels could be harvested in the same time.

As so often happens, this short rendition of history omits interesting details. There were other inventors. There was a fiercely contested “war of the reapers.” There was the application of astute business and manufacturing acumen. And, most intriguingly, there is the question of whether Cyrus really invented the mechanical reaper.

Other Inventors

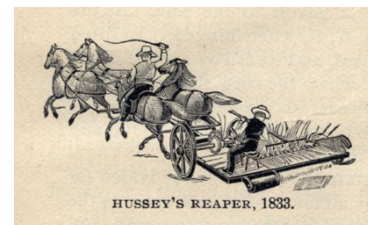
Back breaking, tedious, and time-consuming work of reaping (cutting) wheat with a short-handled sickle or long-handled scythe had been a feature of farming ever since the crop was first cultivated in 9600 B.C. Wheat doesn't stand at attention like grass but sometimes is wet or drooping or both, requiring custom hand cutting. Enthused with the trend to mechanize tasks, in 1783 Britain's Society for the Encouragement of Arts, Manufactures, and Commerce offered a gold medal for a practical reaper.



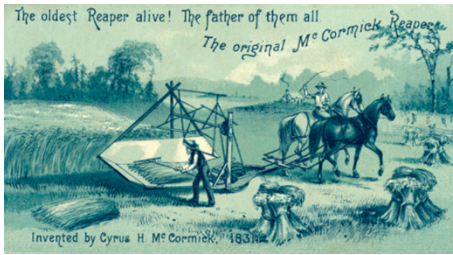
Following unsuccessful attempts by English, French, Germans, and Americans, in 1828 Patrick Bell created a reaper that worked well on his family farm in Scotland. The cutting mechanism was triangular reciprocating blades, think teeth, over fixed triangular blades, think scissors. A twelve-vane reel pulled the crop over the cutting mechanism, all power by the rotation of the wheels pushed

by horses. Pushed? In order not to trample the wheat. The cut wheat would fall onto a tilted canvas sheet and then drop to the side in a windrow, a long row of cut wheat left to dry in a field before being bundled. Bell, who later became a parish minister, believed his invention should benefit all mankind and didn't seek to patent it.

Obed Hussey fashioned a reaper with a more efficient cutting device with lancelike teeth riveted to a flat iron rod that moved back and forth. Hussey, born in Maine, shipped out on whalers from Nantucket, tinkered on his reaping apparatus in an agricultural implements factory in Baltimore, but finished his fully function machine in Cincinnati where flatter land was more suitable for a field trial. Rather than pushing the reaper, Hussey's was pulled but cut the wheat on the side and had small seat for a person to push the grain off the platform into windrows. He impressed the Hamilton County Agricultural



Society by reaping part of the 1833 harvest and applied for a patent at the end of the year. He set up shop in Baltimore in 1838, “Home of the Hussey Reaper.”



McCormick’s reaper employed a reciprocating toothed sickle blade and finger-like guards in front of the blade to stabilize stalks upright. Like Bell, it used a large vane wheel to push the grain against the blade. McCormick used the “push” technique but switched to the “offset” approach cutting grain on the side of the reaper and applied for his patent in 1834.

War of the Reapers

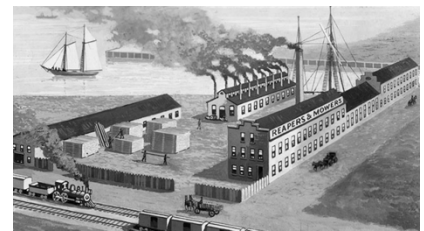
Hussey’s machine was used in several states and considered a better reaper and mower. McCormick offered to meet in head-to-head competition. Hussey accepted.

McCormick was declared the winner in two contests outside Richmond in June 1843, although Hussey couldn’t get his largest reaper in place due to a washed-out bridge. In 1851 at the Exhibition of Industry of All Nations in London and a few weeks later in Paris McCormick was also declared the victor. Four years later the same results in Paris and a year later in Budapest. Not that Hussey’s machine didn’t perform well, just not as well as McCormick’s.

Location, Production, Improvements, Salesmanship: Ingredients for Success

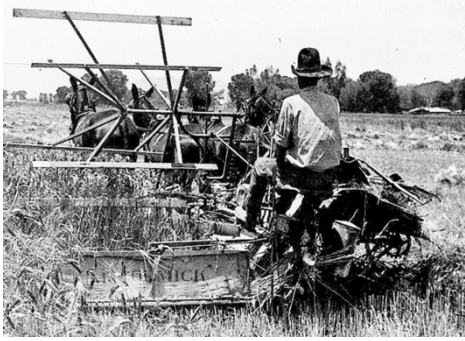
Business-minded Cyrus thought sales would be brisker for his reaper in the Midwest, home of expansive prairies begging to be cultivated. In 1847 he took a chance a new town called Chicago, home to a meager 16,859 inhabitants and an ambitious mayor who convinced McCormick that budding water, road, and railroad infrastructure would connect the city to the Midwest prairies. The mayor put his money where his mouth was and provided financial backing.

By 1849, his factory employed 200, adopted automated processing techniques pioneered by Oliver Evans, and produced 1,400 machines annually. The Chicago Daily Journal described the McCormick manufacturing wonder: “Below, glistening like a knight in armor, the engine of 40 horsepower works...silently...shafts plunge, cylinders revolve, bellows heave, iron is twisted into screws like wax, and saws dash off at the rate of 40 rounds a second.”



By 1868 The McCormick Reaper and Mower Works was the largest factory in Chicago. No longer relying on outsourcing to small outfits, McCormick could manufacture his reapers under one roof, ensuring uniformity, quality control, and dependability.

Meanwhile, McCormick and his brothers made improvements to the machine. They developed a mower for hay, a combination mower-reaper, and a cutter that resisted clogging. McCormick also copied Hussey’s patented open-back guard finger in combination with a vibrating scallop-

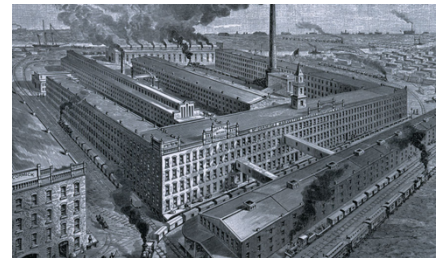


edged cutter for which the court ordered him to pay \$80,000 in damages and licensing fees. He developed a rake arm to push grain off the platform, incorporated an automatic binder developed by the Marsh brothers of Illinois but using twine instead of wire. Improvements drove the need for a new design. McCormick unveiled an all-new Virginia Reaper, complete with a seat for the driver.

After the Chicago fire demolished the factory, McCormick rebuilt and hired a manager to introduce modern manufacturing techniques. These included part interchangeability and standardization based on a system of models, jigs (a guiding template that positions and holds workpieces in place so operators can replicate processes accurately), and fixtures (devices to secure and support workpieces during machining to ensure alignment, and repeatability).

McCormick and his brothers traveled around the Midwest during harvest season to observe their machines at work, note problems, and keep an eye on competition. Reapers were offered for \$35 down with the balance of \$90 due after harvest season.

Complaints were addressed quickly, and spare parts ordered and shipped expeditiously. Salesmen trained new owners on the proper use of the machine, and McCormick introduced the novel idea of a printed instruction manual. Imagine! McCormick relentlessly advertised, bullying or bribing editors to sing the praises of his machines.



What happened to Hussey? His peak production was 521 reapers in 1855. McCormick had produced ten times as many between 1848 and 1860. In 1863 McCormick sold 33,000 reapers and more than doubled that to 85,000 in 1864. Hussey was no longer a commercial competitor. In 1873 the McCormick Harvesting Machine Company merged with several other companies to form International Harvester Company, a dominant player in mechanized farming equipment.

Did Cyrus Invent the Reaper?

Cyrus's father Robert was a blacksmith and an inventor who had developed a threshing machine, blacksmith bellows, hill-side plow, and an automated stopping device for the Evans automated milling mechanism. He spent twenty years working on a reaper, but it didn't perform well.

Robert's wife Polly suggested that he give his inventions to Cyrus who was the most assertive and business minded of the family. She thought he might make something of them. Within less than a year, Cyrus improved the reaper so it performed well. Three years later Cyrus patented it in his own name. Was the machine truly of his own invention? More tellingly, it wasn't until after Robert passed away in July 1846 that Cyrus began to promote himself as the inventor of the reaper. Only his family knew the real story. McCormick reaped what he sowed.

