

HISTORY  
OF  
THE MANUFACTURE OF IRON  
IN ALL AGES,  
AND PARTICULARLY IN THE UNITED STATES  
FROM COLONIAL TIMES TO 1891.

ALSO A SHORT HISTORY OF  
EARLY COAL MINING, IN THE UNITED STATES  
AND A FULL ACCOUNT OF THE  
INFLUENCES WHICH LONG DELAYED THE DEVELOPMENT OF  
ALL AMERICAN MANUFACTURING INDUSTRIES.

BY  
JAMES M. SWANK,  
SECRETARY AND GENERAL MANAGER OF THE AMERICAN IRON AND STEEL  
ASSOCIATION FOR TWENTY YEARS, FROM 1872 TO 1892.

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## CHAPTER L.

## THE HISTORY OF CUT AND WIRE NAILS.

IN one of our chapters devoted to the early iron history of New England and in our New York chapter we have referred to the invention in the closing years of the last century of machines for cutting nails and have claimed for this invention an American origin. We now supplement these statements with some additional information concerning the manufacture of both steel and iron cut nails and also concerning the manufacture of wire nails.

Knight, in his *Mechanical Dictionary*, thus briefly summarizes the leading facts connected with the invention of cut nails, some of which, derived from other sources, we have already presented in preceding chapters.

Cut nails were first made in this country. About 1775 Jeremiah Wilkinson, of Cumberland, Rhode Island, cut tacks from plates of sheet metal, and afterward made nails and spikes in a similar manner, forming the heads in a vise. Ezekiel Reed, of Bridgewater, Massachusetts, in 1786 invented a machine for cutting nails from the plate, and in 1798 obtained a patent for cutting and heading them at one operation. Benjamin Cochran had also constructed a machine of this kind; and Josiah Pierson, of New York, in 1794 patented a machine for cutting nails from the sheet. Perkins's machine, invented in 1790 and patented in 1795, is said to have been capable of making 200,000 nails per day. These and Odiorne's, which embraced some improvements upon them, attracted great attention in England, where they soon came into extensive use. At the close of the century twenty-three patents had been granted for improvements in nail machines.

In 1879 Mr. Shubal Wilder, of New Castle, Pennsylvania, then an old man, who had been employed as a nail-cutter from his boyhood, first at Wareham, Massachusetts, in 1826, and afterwards in Pennsylvania, published the following opinion of several nail-cutting and nail-heading machines which had been in use during his day.

From 1825 to 1835 there was a great increase in the number of nail machines and factories in New England, New York, and through New Jersey and Eastern Pennsylvania; consequently there was a great demand for men to run nail machines. Almost all the time men kept coming to Massachusetts from New Jersey and Pennsylvania on the hunt for nailers,

and this is the reason why so many New England people or their descendants are found in nearly every town where there are iron works and nail factories. The Reed nail machine, now in use, is the only one among the many that have been patented that has succeeded. The Perkins machine, invented by Jacob Perkins, of Massachusetts, made a very good nail, but it was very expensive to keep in order. The Odiorne machine also made a good nail, but was attended with the same difficulty as the Perkins. There were several other side shear machines built, but they never came into use. The improvements made by Melville Otis on the Reed machine have brought it to a high state of perfection: the only thing now remaining to be done is the introduction of a reliable self-feeder, which if not already invented will be an accomplishment of the near future.

Since Mr. Wilder wrote these words the wire nail has largely supplanted the cut nail, and his own town of New Castle has become very prominent in its manufacture.

The primitive nail-cutting machines which were used about the beginning of the present century and for some years afterwards are doubtless correctly described in the following extract from the *History of Indiana County*, Pennsylvania, reference being made to a machine used in 1818 by a blacksmith in the town of Indiana, who is said to have manufactured all the cut nails that were used in Indiana county and adjoining counties.

The machine used was propelled by one person using the right hand on one lever and the right foot on another lever. The left hand was occupied in manipulating the iron from which the nails were cut. The iron was called "nail iron," and was of different widths, according to the requisite sizes desired, such as shingle, clapboard, brads, lathing, etc. Two-inch shingle nails were sold for 37½ cents per pound; clapboard do., 25 cents; brads, 18 cents; lathing, 31 cents, etc. Before cutting, the iron was brought to a red heat in the common blacksmith fire. After the nails were cooled they were taken to a place to be headed. This was done with a spring vice, which was closed by the pressure of the right foot. Only one nail was inserted at a time. One stroke of the hammer on the nail made a brad; two more made a clapboard or weather-boarding nail. The iron was procured at the different rolling mills in Huntingdon county, and hauled in wagons to Indiana county.

These nails were cut from plate iron, which was rolled in the small rolling mills of the day and before the time when bar iron was rolled. To these small rolling mills were sometimes added slitters for slitting the flat strips of iron into nail-rods, which were converted into so-called wrought nails exclusively by hand, as has been elsewhere explained. The iron to be used in the early nail-cutting machines was first

hammered to the thickness of about half an inch and then rolled to the width and thickness required by the sizes of the nails to be cut.

In Knight's *Mechanical Dictionary*, published as late as 1877, the wire nail is thus referred to: "Chests and boxes from the Continent of Europe and from Asia are found to be fastened with nails of this character." Knight neither gives the origin of the wire nail nor describes any of the machines by which it is made. Since the publication of his *Dictionary* the wire nail has become a leading product of American skill.

The first wire nails manufactured in the United States were made in 1851 or 1852 at New York by William Hassall. Six of the machines at first used by Mr. Hassall are still in use in the wire-nail factory of his son, John Hassall, in Brooklyn. Previous to the introduction of wire made of Bessemer steel all the wire nails made by William Hassall were made from iron or brass wire. The wire nails made by William Hassall were of small sizes, escutcheon and upholsterer's nails being specialties. William Hassall was born at Birmingham, England, in 1817, emigrated to New York city in 1850, and died there in 1888, aged 71 years.

The wire nail as a substitute for the cut nail did not, however, come into notice in this country until a very few years ago, in 1883 or 1884. Mr. E. J. Buffington, treasurer of the American Wire Nail Company, whose works are now located at Anderson, Indiana, sends us the following interesting account of the organization of his company, which was the first company to give the wire nail a start in American markets as a competitor of the cut nail.

The origin of the present American Wire Nail Company dates back as far as 1871, when a few German residents of Covington, Kentucky, contributed to a fund for importing three German machines. These three machines made nothing larger than a 3d fine nail, and were kept busy principally on cigar-box nails and small wire brads. For several years the promoters of this new industry met with no success. However they were not discouraged from adding to their then surplus capacity. The American Wire and Screw Nail Company, which was the predecessor of our present company, was organized in 1875, and its management passed into the hands of men with enthusiastic views as to the future of wire nails in this country. The trade in cigar-box nails had grown to be of considerable importance to them, and the plant was increased to twenty machines. Very great difficulty was experienced in inducing the hardware trade to recognize the wire

brad and wire nail as a salable commodity. From 1878 to 1880 the growth of the wire nail was very slow and was attended with many difficulties. Deep-rooted prejudices of all kinds had to be overcome. It was not until the year 1883 or 1884 that the wire nail came into the market prominently as a competitor of the cut nail, and it was at this time that the standard wire nail was instituted. Each successive year after this the demand for wire nails increased phenomenally, and, in fact, passed beyond the wildest hopes of the most sanguine.

Down to 1883 all the cut nails manufactured in this country in commercial quantities were made of iron, but in that year cut nails made of Bessemer steel and others made of combined iron and steel were sold in American markets.

The production of iron and steel cut nails in the United States, not including wire nails, has been as follows from 1873 to 1890, in kegs of 100 pounds.

Years.	Kegs.	Years.	Kegs.	Years.	Kegs.
1873.....	4,024,704	1879.....	5,011,021	1885.....	6,696,815
1874.....	4,912,180	1880.....	5,370,512	1886.....	8,160,973
1875.....	4,726,881	1881.....	5,794,206	1887.....	6,908,870
1876.....	4,157,814	1882.....	6,147,097	1888.....	6,493,591
1877.....	4,828,918	1883.....	7,762,737	1889.....	5,810,758
1878.....	4,396,130	1884.....	7,581,379	1890.....	5,640,946

In 1884 the production of steel cut nails in the United States, including 500 kegs of combined iron and steel nails, was 393,482 kegs, or 5 per cent. of the total cut-nail production. Down to and including 1890 the maximum total production of cut nails was reached in 1886, with 8,160,973 kegs, and the maximum production of steel cut nails alone was reached in 1888, with 4,323,484 kegs. In 1889 and 1890 over two-thirds of the total production of cut nails was made of steel. The quantity of combined iron and steel nails made in 1890 was about 111,000 kegs.

In 1886 the production of wire nails was estimated to have amounted to 600,000 kegs of 100 pounds, made by 27 wire nail works; in 1887 the production was estimated to have been 1,250,000 kegs, made by 47 works; in 1888 it was estimated to have been 1,500,000 kegs; in 1889 it was estimated to have been 2,435,000 kegs. The actual production in 1890 was 3,135,911 kegs, nearly all the nails being made of steel. The wire nails made in 1890 were produced by 47 works.