

“The Story of Barbed Wire: An American Invention”

By Gerald J. Brauer, former director
Ellwood House Museum

Introduction

Barbed wire and the American West are inextricably intertwined. History and legend surrounding barbed wire are tied together in the popular imagination. Indeed the myth-making began in the first decade following the beginnings of this uniquely American invention. How did barbed wire come into being and what are the facts surrounding its origin and its role in the history of the West?

The need for building and maintaining enclosures of various kinds goes back into the prehistory of human endeavor. Wherever man has grown crops or raised livestock the problem of marking boundaries and keeping control over one’s own land and property has led to the building of walls, fences, and other barriers. It is even said that the invention of geometry in ancient Egypt or Babylonia was inspired by the need to mark out property lines after the seasonal floods which enriched the farmers’ fields.

In New England, farms were modest in size, limited by the frequently rocky terrain and the difficulty of clearing the land of trees. Individual pastures were often enclosed by walls made from stones which were piled up as the fields were cleared over the years. As American pioneers moved further west past the Appalachian mountain range which had marked the limit of settlement in the 18th century, the problem of fencing went with the. “Rail” fences made from trees that had been split lengthwise were used in some areas of the South and Midwest. One of the enduring stories of American history tells of a nickname for the young Abraham Lincoln, the “rail splitter” – a metaphor for stamina and hard work – for such was the drudgery of this method of fencing. Erecting such fences was also time-consuming and expensive as the Ohio Agricultural Report of 1877 reports: “If

we had to buy the fence material at this time, and if the fences were to be of the old 'Virginia' rail pattern, the fences would cost as much as the land." The cost of common rail fences was estimated to be approximately \$500 per mile.

As settlers pressed ever further west, the problem of fencing became even more urgent. The western plains were largely treeless, thus limiting the raw materials available for wood or rail fences. In addition, Western ranches were far larger than farms in the East with corresponding larger areas to be fenced. One of the solutions to this problem was to be found in the development of wire fencing of various kinds. Like many other agricultural inventions, barb wire fencing has a very tangled history. However, the essential facts are relatively straight-forward.

The Early Barbed Wire Patents

Plain wire as a fencing material was patented as early as 1821. At that time it was scarce and expensive: drawn by hand, a worker could only produce 15 to 30 lbs. per day. Later production was mechanized. It has been estimated that approximately 350,000 miles of plain galvanized iron wire were used for fencing purposes before the 1870s.

Apparently, the first American patent for something like barbed wire was issued to Lucien B. Smith of Kent, Ohio on June 25, 1867. Patent #66,182 states: "This invention relates to an improvement in the construction of a wire fence especially adapted to use in the prairies of the Western states where timber is scarce. This improvement consists in making the posts of cast iron, between which wires are strung tightly, which wires are provided with spools a few feet apart and protected with short projecting points."

Another early patent was obtained by William D. Hunt of Scott County, New York on July 23, 1867. This was for a "spur wheel" design, described in the patent (#67,117) as follows: "The spurs fit in wire

loosely, so as to revolve easily upon it. By providing the wires with these sharp spur wheels, animals are deterred from pushing against the fence or attempting to break over it. The spurs may be kept in their places and at suitable distances apart by mean of flanges.” Both these early experiments, as well as several others, never achieved any level of production beyond handmade prototypes and went largely unnoticed in the wider agricultural world.

On February 11, 1868, patent #74,379 was issued to Michael D. Kelly of New York, New York. This was described as follows: “My invention relates to imparting to fences of wire a character approximating to that of a thorn-hedge. [The thorns] are cut from [metal] plate...and provided with a hold, so that they may be introduced upon the wire...about six inches apart.” Although the germ of this idea subsequently proved to be the basis for an effective barbed wire, certain errors in the language of the patent and poor business judgement were to deny Kelly the wealth and recognition that might have been his.

That renown and fortune were to fall to three men from DeKalb, Illinois: Joseph F. Glidden, a farmer; Jacob Haish, a lumber dealer; and Isaac L. Ellwood, a hardware merchant. Glidden and Haish were both to develop important patents that led to practical and durable barbed wire at a very low cost. The other, Isaac Ellwood, was to reap the greatest wealth of all – in the manufacture of barbed wire. It seems natural that the first practical barbed wire should have been perfected and manufactured at DeKalb. This small city, 60 miles west of Chicago, is located at the edge of the prairie, that vast treeless expanse where the need for fencing was most acute.

In 1873, Glidden, Haish, and Ellwood visited the DeKalb County Fair. Here they viewed an exhibit for a “wooden strip with metallic points” created by a farmer named Henry Rose from nearby Waterman. Rose had been issued a patent (#138,763) on May 13, 1873. His device was actually nothing more than a strip of wood armed with nail-like spikes meant to be attached to a plain wire

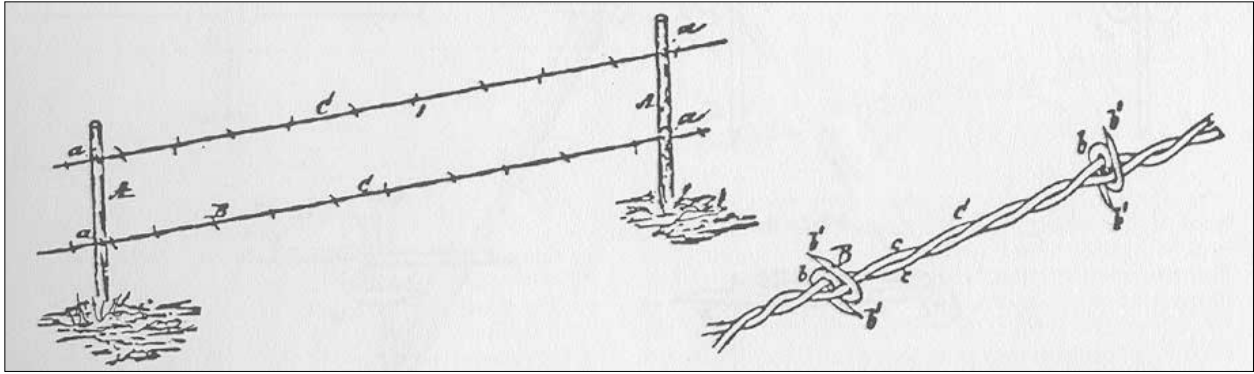
fence. Apparently, he never intended to manufacture and sell his invention, but rather only to sell farmers a license to use it!



Henry Rose's "wooden strip with metallic points," 1893

Inspired by what they had seen at the County Fair, Glidden, Haish, and Ellwood soon began to think about improvements to Rose's crude design. It is said that Joseph Glidden began to make his first barbed wire in the kitchen of his farmhouse, using an old coffee mill to twist the barbs into shape. Later Glidden and his hired hand, Andrew Johnson, worked in his barn utilizing a large grindstone to twist two strands of wire together, having placed the handmade barbs approximately 6-8" apart on one strand of the wire. Indeed, it is the twisting of the wire that holds the barbs in place and prevents their rotating and moving together. After making several hundred feet of wire, he fenced his wife's vegetable garden to keep farm animals out.

Glidden applied for a patent on his invention on October 27, 1873. It is described in the application as "a twisted fence-wire having the transverse spur wire bent at its middle portion about one of the wire strands of said fence-wire, and clamped into position and place by the other wire twisted upon its fellow." Apparently due to a lawsuit instituted by Jacob Haish, Glidden's patent (#157,124) was not granted until more than a year later in November 24, 1874. During this interval, Haish also applied for a patent on his own "S-barb" design which was finally issued on August 13, 1875 (#167,240).

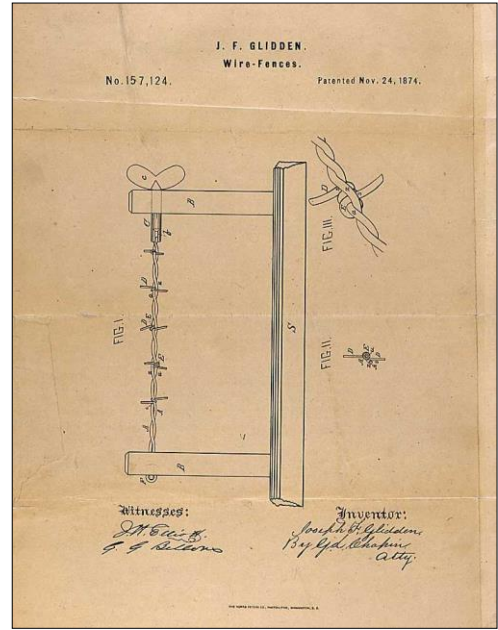


Haish's S-barb was in constant competition with Glidden's design, 1875

Ellwood had quickly recognized the merit of Glidden's concept and in July, 1874 he purchased a one-half interest in Glidden's yet-to-be patent for \$265.00. (DeKalb folklore relates that it was Mrs. Ellwood who saw the promise of Glidden's wire.) Glidden and Ellwood soon formed a partnership and began the manufacture of barbed wire in DeKalb. At this point, the production was still largely by hand. In the first year of 1874, only 10,000 lbs. of barbed wire were produced. The following year, the Glidden & Ellwood Company built its first factory with a steam engine and patents were obtained on machines to mechanize the barbing and spooling of the wire. Production rose dramatically and in 1875, more than 600,000 lbs. of barbed wire were produced.

In 1876, Glidden, almost 65 years old, sold the remaining interest in his patent (trade-marked "the Winner") to the Washburn & Moen Co. of Worcester, Massachusetts for \$60,000 plus royalty rights of \$0.25 per hundred pounds. Washburn & Moen was the largest U.S. manufacturer of plain wire and backed by ample capital, the barbed wire business began to assume gigantic proportions. According to the DeKalb County Manufacturer, 2,840,000 lbs. of barbed wire were manufactured in 1876, 12,863,000 lbs. in 1877, 26,655,000 lbs. in 1878, 50,337,000 lbs. in 1879, and 80,500,000 lbs. in 1880. (80 million lbs. is equal to the weight of 267 blue whales!)

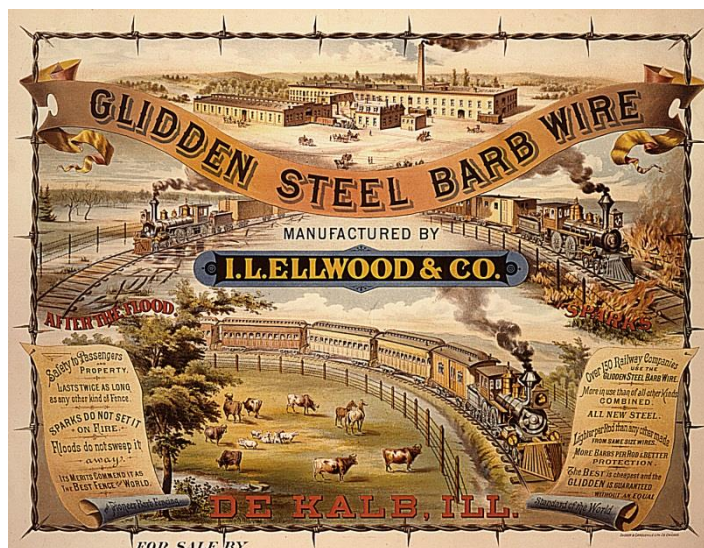
To preserve and extend their monopoly, Washburn & Moen and Isaac Ellwood & Company researched and purchased the rights to most prior and subsequent patents related to barbed wire. However, years of litigation were to follow between the holders of the Glidden patent, Jacob Haish's S-Barb, and others over priority in the invention of the first practical barbed wire. In 1892, the U.S. Supreme Court awarded precedence to Joseph Glidden, in chief because of his original claim that the twisting of the two strands of wire holds the barbs in place. The Court declared: "In the law of p



Glidden's 1874 design was named "the Winner"

Promoting Barbed Wire

One of the first large markets for barbed wire was the railroads. As the lines moved west across the prairies, cattlemen and farmers were alarmed by the loss of their livestock on the unfenced tracks. In 1876, for example, the Missouri, Kansas & Texas Railroad reported that 1,948 animals had been killed in the three states where it operated at a cost of about \$25,000. The introduction of barbed wire



soon offered the railroads a relatively inexpensive way to fence their right of way. (At the time, the barbed wire for a mile of three-strand fence cost approximately \$100. Together with labor and other materials, building a mile of fence cost about \$150.) I.L. Ellwood and Company claimed in the 1880s that it furnished Glidden barbed wire fencing for “over 150 railroad companies – more than all other kinds combined.” A beautiful advertising poster in the collection of the Ellwood House Museum in DeKalb vividly illustrates the use of barbed wire by railroads (see below).

Before barbed wire could achieve widespread use throughout the West, it had to be accepted by ranchers and farmers. Sensing that Texas would be the largest single market for the new invention, Ellwood had sent the team of Henry Sanborn and J.P. Warner to Houston in 1875 to promote and sell barbed wire. They found Texas to be seething with controversy between the “free grassers” who wanted to maintain the open range, and the “nesters” (farmers and small ranchers) who advocated fields protected by fences. Even those who were in favor of fencing scoffed at the idea that a light-weight barbed wire fence could restrain the wild Texas Longhorn cattle. There were also concerns that the sharp barbs would inflict wounds on cattle. If these cuts became infected, the cattle could become diseased and die. Because of these controversies, Sanborn and Warner failed to sell much barbed wire. This situation was to change when a 21-year-old salesman named John W. Gates was hired by Ellwood.

Arriving in Texas, Gates obtained permission to build a barbed wire corral in San Antonio’s Military Plaza. He announced that he intended to demonstrate that this fence would contain even the wildest Texas Longhorns and offered to take all bets on the outcome. Gates’ bravado soon aroused the interest of the many cattlemen who made San Antonio their base. When the fenced enclosure was complete, he had 30-40 of the wildest and meanest longhorn bulls driven into the corral. The animals, aroused by the taunts of the onlookers, were provoked repeatedly to charge the barbed wire.

The fences held and Gates' fortune was made! Soon he began to sell barbed wire to the cattlemen by the railcar load.

Spurned by Ellwood in a bid for a partnership, Gates struck out on his own, starting "moonshine" barbed wire mills in Missouri. The illegal manufacture of barbed wire was widespread and the potential profits great. In order to stop this drain on their revenues, Washburn & Moen and I.L. Ellwood and Company instituted numerous patent infringement lawsuits in the 1870s and 1880s. Hundreds of thousands of dollars were spent on such litigation over the years.

John W. Gates' early success as a promoter in San Antonio was only a foretaste of his eventual accomplishments as a businessman, "robber baron," and corporate raider in the best (and worst) tradition of late 19th century America. His taste for daring both in gambling and in business led to the nickname "Bet-A-Million" Gates. Eventually I.L. Ellwood and Company, as well as other smaller barbed wire manufactures, was absorbed into the American Steel & Wire Company, a "trust" formed by Gates in 1898. This company was subsequently merged into the U.S. Steel Corporation at the turn of the century.

Ranching and Barbed Wire

The "cattle kingdom" of the American West had been born in the decade after the Civil War (1865-75). It was at this time that large ranches were established in the grasslands of the central prairies. This ranching empire eventually stretched in a broad band north from the Texas Panhandle to the Dakotas and west to the Rocky Mountains.

The market for beef was increasing in the burgeoning cities of the East and Middle West, such as New York, Chicago, and St. Louis. To fill this demand, Panhandle cattlemen began to drive the native longhorn cattle north from Texas to the railroads which were being established in Kansas and

elsewhere. The loose and freewheeling lifestyle of these new cow-towns – such as Abilene, Dodge City, and Cheyenne – forms part of the enduring image of the west: cowboys, saloons, dancehall girls, barroom brawls, and gunfights on the one side, the lone lawman and peaceable settlers on the other.

The longhorn was a tough breed that could endure the hardships of a 700-1000 mile journey. The prairie grasslands provided good grazing along the way and enough water could be found to sustain man and beast. Importantly, the path was unimpeded by farms, fields, and fences! This was the era of the open range.

The two factors most important to the success of any ranching operation were plentiful grasslands and water to sustain the cattle. To establish water rights, ranchers established their homesteads along streams and rivers. Cattle were allowed to graze free over thousands of square miles of land in the public domain. During “round-ups” in the spring and fall, the cattle were branded to establish ownership. Cattle were then moved to winter ranges where the grass was still long and plentiful or driven to the cattle towns along the rail lines for sale and shipment east.

Ownership of the land itself was not an important consideration in the early years of cattle ranching. In earlier decades, the broad and largely treeless prairies had been bypassed by the first wave of settlers as they trekked further west to more hospitable landscapes in Oregon and California. The prairie grasslands did not appear to be suited to the agriculture of small farms.

Several factors began to change in the 1870s. The prairies began to be more thickly settled as farmers realized that the heavy prairie sod could be turned with the new steel plows which were becoming available and planted with crops like corn and wheat. Settlement was also encouraged by the “Homestead Act” (1862) which granted 160 acres (later 320 and 640 acres) to those who

would cultivate it for five years. In addition, large grants of land were made to the railroads to encourage development.

For years, southwestern cattlemen had driven their livestock over the open trails to the rail lines in Kansas or to northern ranges. By the 1880s, the influx of settlers who fenced their farms and waterholes was so great that the long cattle drives were forced even further to the west. They ultimately had to be abandoned entirely in favor of the railroads. Barbed wire thus played an important role in ending this colorful era in the history of the West.

The introduction of pure-bred cattle also contributed to the fencing of the West and the demise of the open range. The native longhorn breed was very hardy and could withstand the rigors of the long cattle drive, but its meat was tough and stringy. As long as there was large unsatisfied demand for beef, longhorn cattle were still able to bring relatively high prices at market (\$30-40/head). However, as more and more cattle were driven to market, prices began to fall.

Soon it was realized that pure-bred cattle were part of the solution to low beef prices. In order to maintain the desirable quality of the meat, it was necessary to control the intermingling of the less desirable longhorn cattle with the newer breeds (especially the Hereford) which were being introduced – barbed wire was the ideal solution. Progressive cattlemen began to fence portions of their ranches.

The Range Wars

The availability of a cheap fencing material – barbed wire – provided an opportunity to fence large areas – something which had not been possible before. Indiscriminate fencing occurred as a result. The closing of the open range by ranchers who fenced lands in the public domain led in part to a violent period which has come to be known as the “Range Wars.” Primarily this was a struggle of

farmers and small ranchers against powerful cattlemen who wanted to retain control over hundreds (or thousands) of square miles of rangeland.

To preserve his rights to the range, a cattleman might fence a large area adjacent to that to which he held legal title. In some cases, homesteaders were fenced out of water rights or even entire farms fenced inside of large ranges enclosed by barbed wire. In other cases, ranchers were shut out of the choicest grazing lands they had always considered their own by the homesteader's claims and fences.

The first large-scale use of barbed wire in Texas was for the construction of so-called "drift fences." Often sections of drift fences ran for 30 or more miles – the Panhandle was protected by hundreds of miles of fence. These fences were primarily erected to keep outside cattle from encroaching on the protected range. Cattle often "drifted" in the face of a severe storm or in order to find better grass. In the Panhandle Fence-Cutting War (May-November 1883) a group of Texas cattle barons hired gunmen to patrol their drift fences. Ultimately, as many as seven persons were killed and hundreds of miles of barbed wire cut or destroyed by homesteaders or small operators who held legal title to land or intended to file Homestead claims. The situation was also exacerbated by large New York and Texas land companies who were attempting to sell land for farms.

During the severe winter of 1886/87, hundreds of thousands of cattle perished in blizzard conditions as they froze at drift fences, unable to proceed any further. Their carcasses piled up for miles and miles. Many open range cattlemen lost 80-90% of their herd in this way. This blizzard helped persuade even the most recalcitrant cattlemen that their long-term survival depended on changes in the old way of doing business. Operations were scaled back, herd size reduced, and more adequate care provided. Cattle were now placed in barbed-wire enclosed pastures and provided with forage, shelter, and water rather than being left to wander over the open range unprotected – except for a

brand. Thus, the economic issues of stock-raising led to the end of the open range even more than settlement by farmers and other “nesters” did.

The cry of “down with the fences” or on the part of those shut out of the public domain eventually led to Congressional legislation ordering the removal of illegal fencing on public lands beginning in 1885. These edicts were carried out very slowly in many areas. Even during his term in office (1901-1909), Theodore Roosevelt was still struggling against illegal fencing by “cattle barons” in Nebraska, the Dakotas, Wyoming, Texas, and New Mexico.

It has been said that barbed wire – together with the windmill and the six-shooter – were the three things most responsible for the settlement of the Great Plains and the Trans-Mississippi West. There can be no doubt that barbed wire played the most significant role in ending the cattle drives and the open range. Instead, there rose a West of settled agriculture and stock-raising – perhaps not as colorful as the old West – but more viable and diverse in the end.

Epilogue: Barbed Wire Collecting

Although barbed wire based upon the Glidden patent (“the Winner”) and several others (Haish S-barb, Baker Perfect) accounts for approximately 90% of all the production over the decades, hundreds of types of barbed wire were eventually patented and produced – some in very small quantities. This fact, together with the romance of Western lore in general, has led to the formation of large collections of barbed wire patent-type specimens. The standard length for wire specimens is 18 inches. *The Bobbed Wire Bible* by Jack Glover is the best standard for identifying unusual or rare barbed wire types. Collectors are found all across the U.S., but especially in the Southwest and Great Plains states. Barbed wire specimens are generally traded among collectors, although samples have also been purchased at auction – in a few cases for more than \$1,000 each.