Wire Encyclopedia Article

Wire

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Wire and wire rope were developed as stronger substitutes for their fiber counterparts. String, twine and rope made from fibrous materials have their own uses. Metal wire and rope, on the other hand, are unsurpassed in their ability to support heavy loads. They are also invaluable for the transmission of electricity and sound. Wire may be made from iron, steel, copper, aluminum and many other metals, depending on the nature of its intended use. Wire was originally formed by forging and hammering strips of metal into long strands. A method called drawing was developed in A. D. 1000 in which wire is elongated by pulling, or drawing out. This process produces a stronger and more uniform wire than does forging. Rudolf of Nuremberg is credited with having used water power to draw wire about 1350. During the 1800s, wire drawing was first done using steam engines. Ichabod Washburn is considered the father of the steel wire industry. He founded a wire mill in Worcester, Massachusetts in 1831.

Today, nearly all wire is made by machine. Ingots are rolled into bars, called billets. The billets are rolled into smaller rods, which are baked to reduce brittleness, coated with a lubricant, then, finally, passed through a series of dies which reduce the rods to wire. To produce greater thicknesses, wire is twisted into rope rather than producing a single thick strand which might break due to a single weak spot. This is done by twisting wires around a center wire to create a strand of moderate thickness. Such strands, in turn, are twisted around a center core. The core can consist of either hemp or wire, the former being cheaper, the latter being stronger. Wire rope was first made in the 1830s, and in 1840 a patent for wire rope was granted to Englishman Robert Newell. Using this twisting method, John Roebling pioneered the manufacture of massive steel cables for the construction of suspension bridges, including the Brooklyn Bridge in New York in 1883.Vast amounts of wire cable are used today for telecommunications and computer applications, wiring individual components within a machine, and connecting machines in both local and wide area networks.