

Chain

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A **chain** is a series of connected links which are typically made of metal. A chain may consist of two or more links.

- Those designed for lifting, such as when used with a hoist; for pulling; or for securing, such as with a bicycle lock, have links that are torus shaped, which make the chain flexible in two dimensions (The fixed third dimension being a chain's length.)
- Those designed for transferring power in machines have links designed to mesh with the teeth of the sprockets of the machine, and are flexible in only one dimension. They are known as roller chains, though there are also non-roller chains such as block chain.

Two distinct chains can be connected using a quick link which resembles a carabiner with a screw close rather than a latch.

Contents

- 1 Uses for chain
 - 1.1 Decoration
 - 1.2 Power transfer
 - 1.3 Security and restraint
 - 1.4 Traction and pulling
 - 1.5 Weapons
 - 1.6 Other uses
- 2 Invention
- 3 Symbolism
- 4 Gallery
- 5 See also
- 6 References
- 7 External links



A broad metal chain made of torus-shaped links.



A metal chain with diamond-shaped link pins.



Roller chains.

Uses for chain

Uses for chain include:

Decoration

- Chain of office, collar or heavy gold chain worn as insignia of office or a mark of fealty in medieval Europe and the United Kingdom
- Decorating clothing, some people wear wallets with chains connected to their belts, or pants decorated with chains
- Figaro chain, a decorative style of chain most often seen in men's jewelry
- Omega chain, a pseudo-chain where the 'links' are mounted on a backing rather than being interlinked
- Jewelry chain, many necklaces and bracelets are made out of small chains of gold and silver



Part of The Hudson River Chain at West Point

Power transfer

- Bicycle chain, transfers power from the pedals to the drive-wheel of a bicycle, thus propelling it
- Chain drive, the main feature that differentiated the safety bicycle
- Chain gun, type of machine gun that is driven by an external power source, sometimes connected by a chain, to actuate the mechanism rather than using recoil
- Chain pumps, type of water pump where an endless chain has positioned on it circular discs
- Chainsaw, portable mechanical, motorized saw using a cutting chain to saw wood
- Flat chain, form of chain used chiefly in agricultural machinery
- Ladder chain, a light wire chain used with sprockets for low torque power transmission
- O-ring chain, a specialized type of roller chain
- Roller chain, the type of chain most commonly used for transmission of mechanical power on bicycles, motorcycles, and in industrial and agricultural machinery
- Timing chain, used to transfer rotational position from the crankshaft to the valve and ignition system on an internal combustion engine, typically with a 2:1 speed reduction.

Security and restraint

- Ball and chain, phrase that can refer to either the actual restraint device that was used to slow down prisoners, or a derogatory description of a person's significant other
- Belly chain (restraint), a physical restraint worn by prisoners, consisting of a chain around the prisoner's waist, to which his hands are chained or cuffed
- Bicycle lock (or "Bicycle Chain"), lockable chain
- Chain boom, large chains used to exclude warships from harbors and rivers
- Chain link fencing, fencing that utilizes vertical wires that are bent in a *zig zag* fashion and linked to each other
- Chain mail, a type of armor consisting of small metal rings linked together in a pattern to form a mesh.
- Door chain, a type of security chain on a door that makes it possible to open a door from the inside while still making it difficult for someone outside to force their way inside
- Leg iron chains (fettters), an alternative to handcuffs
- Prisoner transport restraints, a combination which consists of a pair of handcuffs attached by a longer chain to a pair of leg irons
- Security chain, chain with square edges to prevent cutting with bolt-cutters

Traction and pulling

- Anchor cable, as used by ships and boats, in British nautical usage it is a cable, not a chain
- Chain steam shipping
- Chain-linked Lewis, lifting device made from two curved steel legs
- Curb chain, used on curb bits when riding a horse
- High-tensile chain (or "Transport chain"), chain with a high tensile strength used for towing or securing loads
- Jack chain, a toothed chain used to move logs
- Lead shank (or "Stud chain"), used on horses that are misbehaving
- Pull switch, an electrical switch operated by a chain
- Rigid chain actuator, a type of chain that only bends in one direction, allowing it to operate under compression
- Snow chains, used to improve traction in snow
- Lavatory chain, the chain attached to the cistern of an old-fashioned W.C. in which the flushing power is obtained by a gravity feed from above-head height. Although cisterns no longer work like that, the phrase "pull the chain" is still encountered to mean "flush the toilet".



Prisoner in transport restraints

Weapons

- Chain gun, type of machine gun that is driven by an external power source, sometimes connected by a chain, to actuate the mechanism rather than using recoil
- Chain-shot, a type of ammunition for a cannon, used to inflict damage to the rigging of a sail vessel in naval warfare
- Chain weapon, a medieval weapon made of one or more weights attached to a handle with a chain

Other uses


- Chains can also be used as a percussion instrument for special effects, such as in Schönberg's *Gurre-Lieder* and Janáček's *From the House of the Dead*.
- Keychain, a small chain that connects a small item to a keyring
- Chain sinnet, a method of shortening a rope or other cable while in use or for storage
- Chain stitch, a sewing and embroidery technique

Invention

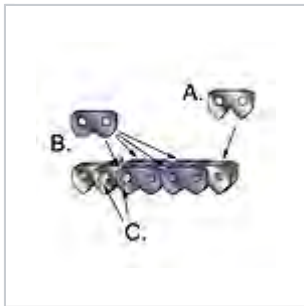
The metal link chain has been in use since at least 225 BC.^[1]

Symbolism

The prevalent modern symbolism is oppression, due to the use for a mechanical restriction of the liberty of a human or animal.

Chains can also symbolize interconnectivity or interdependence. Unicode, in versions 6.x, contains the U+1F517  LINK SYMBOL, which may show chain link(s). It may denote a hyperlink.

Gallery



Silent chain



Rope chain



Twisted link chain



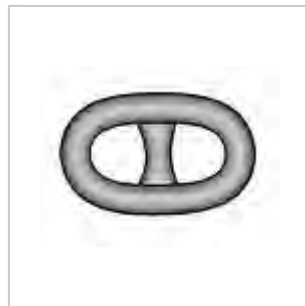
Wheat chain



Single jack chain



Double jack chain



Stud link chain



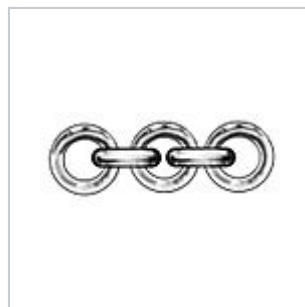
Ladder link chain



Foxtail chain



Singapore chain



Rolo chain

See also

- Belt (mechanical)
- Chain (unit)
- Chain gang
- Chain letter
- Gunter's chain
- Lariat chain

References

1. As early as 225 BC, chain was used to draw a bucket of water up from a well. This very early bucket chain was composed of connected metal rings. Tsubakimoto Chain Co., ed. (1997). *The Complete Guide to Chain*. Kogyo Chosaki Publishing Co., Ltd. p. 240. ISBN 0-9658932-0-0. p. 211. Retrieved 17 May 2006.

External links

- "Chain". *Encyclopædia Britannica*. **5** (11th ed.). 1911.



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Categories: Chains | Mechanical power control | Mechanical power transmission

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