Staple

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A staple is a type of two-pronged fastener, usually metal, used for joining or binding materials together. Large staples might be used with a hammer or staple gun for masonry, roofing, corrugated boxes and other heavy-duty uses. Smaller staples are used with a stapler to attach pieces of paper together; such staples are a permanent and durable fastener for paper documents, unlike the paper clip.

# Etymology

The word 'staple' originated in the late thirteenth Century, from Old English stapol, meaning "post, pillar". The word's first usage in the paper-fastening sense is attested from 1895.[1]

# Advantages

Most kinds of staples are easier to produce than nails or screws.

The crown of the staple can be used to bridge materials butted together.

The crown can bridge a piece and fasten it without puncturing with a leg on either side, e.g. fastening cable to wood framing.

The crown provides greater surface area than other comparable fasteners. This is generally more helpful with thinner materials.

# Staples in Construction

Construction staples are commonly larger, have a more varied use, and are delivered by a staple gun or hammer tacker. Staple guns do not have backing anvils and are exclusively used for tacking. They typically have staples made from thicker metal. Some staple guns use arched staples for fastening small cables, e.g. phone or cable TV, without damaging the cable. Faster and easier devices known as hammer tackers or staple hammers operate without complex mechanics as a simple head loaded with a strip of staples drives them directly; this method requires a measure of skill. Powered electric staplers or pneumatic staplers drive staples easily and accurately; they are the simplest manner of applying staples, but are hindered by a cord or hose.

# Paper Staples

The term "stapling" is used for both fastening with straight or bent legs; however, when differentiating between the two, the term "tacking" is used for straight-leg stapling, while the term "stapling" is used for bent-leg stapling when being contrasted with "tacking".

The legs of a staple can be allowed to protrude out the back side and folded over to provide greater binding than the friction of straight legs.

# Staple Specifications

Modern staples for paper staplers are made from zinc-plated steel wires glued together and bent to form a long strip of staples. Staple strips are commonly available as "full strips" with 210 staples per strip. More expensive stainless steel staples which do not rust are also available.

Some staple sizes are used more commonly than others, depending on the application required. Some companies have unique staples just for their products. Staples from one manufacturer may or may not fit another manufacturers unit even if they look similar and serve the same purpose.

Staples are often described as X/Y (e.g. 24/6 or 26/6), where the first number X is the gauge of the wire, and the second number Y is the length of the shank (leg) in millimeters. Some exceptions to this rule include staple sizes like No. 10.

Common sizes for the home and office include: 26/6, 24/6, 24/8, 13/6, 13/8 and No. 10 for mini staplers. Common sizes for heavy duty staplers include: 23/8, 23/12, 23/15, 23/20, 23/24, 13/10, and 13/14.

Stapleless staplers cut and bend paper without using metal fasteners.

# Standards

There are few standards for staple size, length and thickness. This has led to many different incompatible staples and staplers systems, all serving the same purpose or applications.

24/6 staples are described by the German DIN 7405 standard.

In the United States, the specifications for non-medical staples are described in ASTM F1667-05, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples. A typical office staple is designated as F1667 STFCC-04: ST indicates staple, FC indicates flat top crown, C indicates cohered (joined into a strip), and 04 is the dash number for a staple with a length of 0.250 inch (6 mm), a leg thickness of 0.020 inch (500 μm), a leg width of 0.030 inch (800 μm), and a crown width of 0.500 inch (13 mm).

# Uses

## Staples in the Home

The most common staples are used with paper. They are almost exclusively applied with a mechanical stapler which clinches the legs after they pass through the paper. Staples of this type are used with a desktop stapling machine.

When stapling with a stapler the papers to be fastened are placed between the main body and the anvil. The papers are pinched between the body and the anvil, then a drive blade pushes on the crown of the staple on the end of the staple strip. The staple breaks from the end of the strip and the legs of the staple are forced through the paper. As the legs hit the grooves in the anvil they are bent to hold the pages together. Many staplers have an anvil in the form of a "pinning" or "stapling" switch. This allows a choice between bending in or out. The outward bent staples are easier to remove and are for temporary fastening or "pinning".

Most staplers are capable of stapling without the anvil to drive straight leg staples for tacking.

There are various types of staples for paper, including heavy-duty staples, designed for use on documents 20, 50, or over 100 pages thick. There are also speedpoint staples, which have slightly sharper teeth so they can go through paper more easily.

## Staples in Business

Staples are commonly considered to be a neat and efficient method of binding paperwork such as letters and documents in all areas of office business. This is predominantly because of the low cost and high availability of the staple, and because its small size does not detract from the content of the document.

The large staples found on corrugated cardboard boxes have folded legs, but they are applied from the outside and do not use an anvil; jaw-like appendages push through the cardboard alongside the legs and bend them from the outside.

Saddle stitch staplers, also known as "booklet staplers," feature a longer reach from the pivot point than general-purpose staplers and are used to bind pages into a booklet or "signature". Some, such as the Ring King, can also use "loop-staples" that enable the user to integrate folded matter into ring books and binders.

Outward clinch staples are blind staples, i.e. there is no anvil, and they are applied with a staple gun.[2] When applied, each staple leg forms a curve bending outwards. This is in part caused by the shape of the crown, which is like an inverted "V", and not flat as in ordinary staples. Also, the legs are sharpened with an inside bevel point, causing them to tend to go outwards when forced into the base material. These staples are used for upholstery work, especially in vehicles, where they are used for fastening fabric or leather to a foam base.

## Staples in Packaging

* Staples can attach items to paperboard for carded packaging
* Staples of stitches can be used to attach the manufacturer's joint of corrugated boxes
* Staples are used to close corrugated boxes.[2] Small (nominally 1/2 inch crown) staples can be applied to a box with a post stapler. Wider crown (nominally 11⁄4 inch) staples can be applied with a blind clincher
* Staples can help fabricate and attach paperwork to wooden boxes and crates.

## Staples in Medicine

Surgical staples are used for the closing of incisions and wounds, a function also performed by sutures.

# History

In ancient times, the staple had different functions.

Large metal staples dating from the 6th century BC have been found in the masonry works of the Persian empire (ancient Iran). For the construction of the Pasargadae, these staples, which are known as "dovetail" or "swallowtail" staples, were used for tightening stones together.

The home stapling machine was developed by Henry Heyl in 1877 and registered under US Patent No. 195,603. Heyl's companies, American Paper-Box Machine Company, Novelty Paper Box Company, and Standard Box Company, all of Philadelphia, manufactured machinery using staples in paper packaging and for saddle stitching.[3]

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