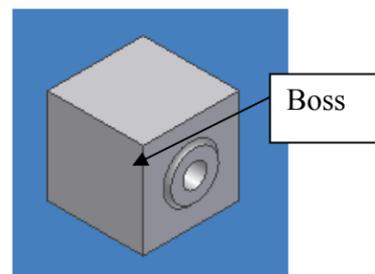


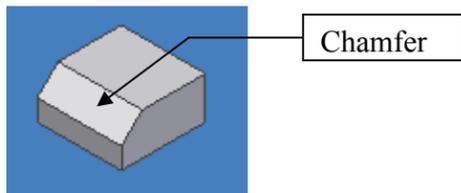
## Technical Terms

*The beginning of wisdom is to call things by their right names.*

<b>Acme (n)</b>	Screw thread form.
<b>Addendum (n)</b>	Radial distance from pitch circle to top of gear tooth.
<b>Allen screw (n)</b>	Special setscrew or cap screw with hexagon socket in head.
<b>Allowance (n)</b>	Minimum clearance between mating parts.
<b>Alloy (n)</b>	Two or more metals in combination, usually a fine metal with a baser metal.
<b>Aluminum (n)</b>	A lightweight but relatively strong metal. Often alloyed with copper to increase hardness and strength.
<b>Angle iron (n)</b>	A structural shape whose section is a right angle.
<b>Anneal (v)</b>	To heat and cool gradually, to reduce brittleness and increase ductility.
<b>Arc-weld (v)</b>	To weld by electric arc. The work is usually the positive terminal.
<b>Babbitt (n)</b>	A soft alloy for bearings, mostly of tin with small amounts of copper and antimony.
<b>Bearing (n)</b>	A supporting member for a rotating shaft.
<b>Bevel (n)</b>	An inclined edge, not at right angle to joining surface.
<b>Bolt circle (n)</b>	A circular centerline on a drawing, containing the centers of holes about a common center.
<b>Bore (v)</b>	To enlarge a hole with a boring mill.



<b>Boss (n)</b>	A cylindrical projection on a casting or a forging.
<b>Brass (n)</b>	An alloy of copper and zinc.
<b>Braze (v)</b>	To join with hard solder of brass or zinc.
<b>Brinell (n)</b>	A method of testing hardness of metal.
<b>Broach (n)</b>	A long cutting tool with a series of teeth that gradually increase in size, which is forced through a hole or over a surface to produce a desired shape.
<b>Bronze (n)</b>	An alloy of eight or nine parts of copper and one part of tin.
<b>Buff (v)</b>	To finish or polish on a buffing wheel composed of fabric with abrasive powders.
<b>Burnish (v)</b>	To finish or polish by pressure upon a smooth rolling or sliding tool.
<b>Burr (n)</b>	A jagged edge on metal resulting from punching or cutting.
<b>Bushing (n)</b>	A replaceable lining or sleeve for a bearing.
<b>Calipers (n)</b>	Instrument (of several types) for measuring diameters.
<b>Cam (n)</b>	A rotating member for changing circular motion to reciprocating motion.
<b>Carburize (v)</b>	To heat a low-carbon steel to approximately 2000 degrees F in contact with material, which adds carbon to the surface of the steel, and to cool slowly in preparation for heat treatment.
<b>Caseharden (v)</b>	To harden the outer surface of a carburized steel by heating and then quenching.
<b>Castellate (v)</b>	To form like a castle, as a castellated shaft or nut.
<b>Casting (n)</b>	A metal object produced by pouring molten metal into a mold.
<b>Cast iron (n)</b>	Iron melted and poured into molds.
<b>Center drill (n)</b>	A special drill to produce bearing holes in the ends of a work piece to be mounted between centers. Also called a "combined drill and countersink."
<b>Chamfer (n)</b>	A narrow inclined surface along the intersection of two surfaces.



**Chase (v)** To cut threads with an external cutting tool.

**Cheek (n)** The middle portion of a three-piece flask used in molding.

**Chill (v)** To harden the outer surface of cast iron by quick cooling, as in a metal mold.

**Chip (v)** To cut away metal with a cold chisel.

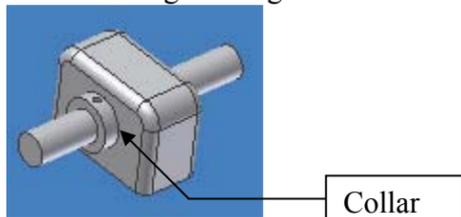
**Chuck (n)** A mechanism for holding a rotating tool or work piece.

**Coin (v)** To form a part in one stamping operation.

**Cold-rolled steel (CRS)(n)**

Open hearth or Bessemer steel containing 0.12-0.20% carbon that has been rolled while cold to produce a smooth, quite accurate stock.

**Collar (n)** A round flange or ring fitted on a shaft to prevent sliding.



**Colorharden (v)** Same as caseharden, except that it is done to a shallower depth, usually for appearance only.

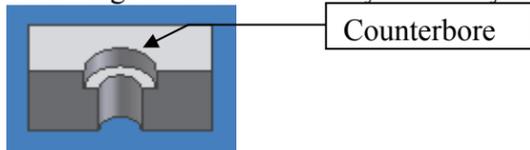
**Cope (n)** The upper portion of a flask used in molding.

**Core (v)** To form a hollow portion in a casting by using a dry-sand core or a green-sand core in a mold.

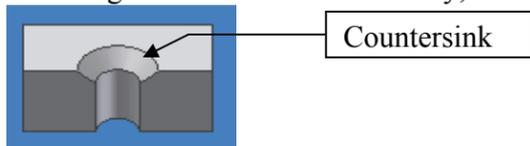
**Coreprint (n)** A projection on a pattern, which forms an opening in the sand to hold the end of a core.

**Cotter pin (n)** A split pin used as a fastener, usually to prevent a nut from unscrewing.

**Counterbore (v)** To enlarge an end of a hole cylindrically with a counterbore.



**Countersink (v)** To enlarge an end of a hole conically, usually with a countersink.



**Crown (n)** A raised contour, as on the surface of a pulley.

**Cyanide (v)** To surface-harden steel by heating in contact with a cyanide salt, followed by quenching.

**Dedendum (n)** Distance from pitch circle to bottom of tooth space.

**Development (n)** Drawing of the surface of an object unfolded or rolled out on a plane.

**Diametral pitch (n)**

Number of gear teeth per inch of pitch diameter.

**Die (n)** (1) Hardened metal piece shaped to cut or form a required shape in a sheet of metal by pressing it against a mating die.

(2) Also used for cutting small male threads. In a sense is opposite to a tap.

**Die casting (n)** Process of forcing molten metal under pressure into metal dies or molds, producing a very accurate and smooth casting.

**Die stamping (n)** Process of cutting or forming a piece of sheet metal with a die.

**Dog (n)** A small auxiliary clamp for preventing work from rotating in relation to the face plate of a lathe.

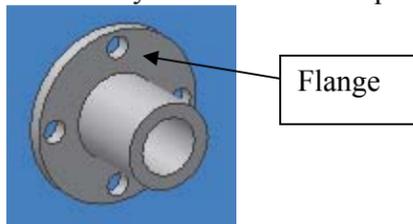
**Dowel (n)** A cylindrical pin, commonly used to prevent sliding between two contacting flat surfaces.



**Draft (n)** The tapered shape of the parts of a pattern to permit it to be easily withdrawn from the sand or, on a forging, to permit it to be easily withdrawn from the dies.

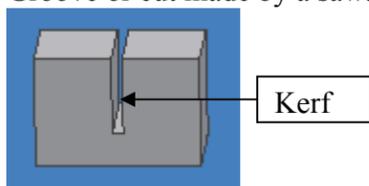
- Drag (n)** Lower portion of a flask used in molding.
- Draw (v)** To stretch or otherwise to deform metal. Also to temper steel.
- Drill (v)** To cut a cylindrical hole with a drill. A blind hole does not go through the piece.
- Drill press (n)** A machine for drilling and other hole-forming operations.
- Drop forge (v)** To form a piece while hot between dies in a drop hammer or with great pressure.
- Face (v)** To finish a surface at right angles, or nearly so, to the centerline of rotation on a lathe.
- FAO** Finish All Over.
- Feather key (n)** A flat key, which is partly sunk in a shaft and partly in a hub, permitting the hub to slide lengthwise of the shaft.
- File (v)** To finish or smooth with a file.
- Fillet (n)** An interior rounded intersection between two surfaces.
- Fin (n)** A thin extrusion of metal at the intersection of dies or sand molds.
- Fit (n)** Degree of tightness or looseness between two mating parts, as a loose fit, a snug fit, or a tight fit.
- Fixture (n)** A special device for holding the work in a machine tool, but not for guiding the cutting tool.

- Flange (n)** A relatively thin rim around a piece.

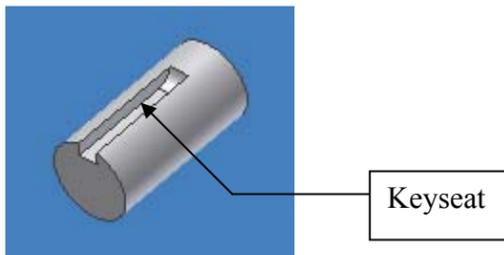


- Flash (n)** Same as fin.
- Flask (n)** A box made of two or more parts for holding the sand in sand molding.
- Flute (n)** Groove, as on twist drills, reamers, and taps.
- Forge (v)** To force metal while it is hot to take on a desired shape by hammering or pressing.
- Galvanize (v)** To cover a surface with a thin layer of molten alloy, composed mainly of zinc, to prevent rusting.
- Gasket (n)** A thin piece of rubber, metal, or something other mating material, placed between surfaces to make a tight joint.
- Gate (n)** The opening in a sand mold at the bottom of the sprue through which molten metal passes to enter the cavity or mold.
- Graduate (v)** To set off accurate divisions on a scale or dial.
- Grind (v)** To remove metal by means of an abrasive wheel, often made of carborundum. Use chiefly where accuracy is required.
- Harden (v)** To heat steel above a critical temperature and then quench in water or oil.
- Heat-treat (v)** To change the properties of metals by heating and then cooling.
- Interchangeable (adj.)** Refers to a part made to limit dimensions so that it will fit any mating part similarly manufactured.
- Jig (n)** A device for guiding a tool in cutting a piece. Usually it holds the work in position.

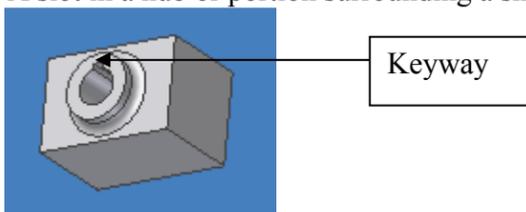
- Kerf (n)** Groove or cut made by a saw.



- Key (n)** A small piece of metal sunk partly into both shaft and hub to prevent rotation.
- Keyseat (n)** A slot or recess in a shaft to hold a key.



**Keyway (n)** A slot in a hub or portion surrounding a shaft to receive a key.



**Knurl (v)** To impress a pattern of dents in a turned surface with a knurling tool to produce a better handgrip.

**Lap (v)** To produce a very accurate finish by sliding contact with a lap, or piece of wood, leather, or soft metal impregnated with abrasive powder.

**Lathe (n)** A machine used to shape metal or other materials by rotating against a tool.

**Lug (n)** An irregular projection of metal, but not round as in the case of a boss, usually with a hole in it for a bolt or screw.

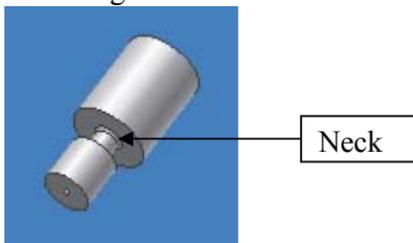
**Malleable casting (n)** A casting that has been made less brittle and tougher by annealing.

**Mill (v)** To remove material by means of a rotating cutter on a milling machine.

**Mold (n)** The mass of sand or other material that forms the cavity into which molten metal is poured.

**MS (n)** The machinery steel, sometimes called mild steel with a small percentage of carbon. Cannot be hardened.

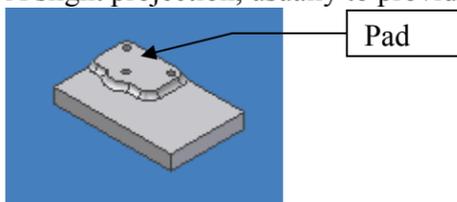
**Neck (v)** To cut a groove called a neck around a cylindrical piece.



**Normalize (v)** To heat steel above its critical temperature and then to cool it in air.

**Pack-harden (v)** To Carburize, then to caseharden.

**Pad (n)** A slight projection, usually to provide a bearing surface around one or more holes.



**Pattern (n)** A model, usually of wood, used in forming a mold for a casting. In sheet metal work a pattern is called a development.

**Peen (v)** To hammer into shape with a bullpen hammer.

**Pickle (v)** To clean forgings or castings in dilute sulphuric acid.

**Pinion (v)** The smaller of two mating gears.

**Pitch circle (n)** An imaginary circle corresponding to the circumference of the friction gear from which the spur gear was derived.

**Plane (v)** To remove material by means of the planer.

**Planish (v)** To impart a planished surface to sheet metal by hammering with a smooth-surfaced hammer.

**Plate (v)** To coat a metal piece with another metal, such as chrome or nickel, by electrochemical methods.

**Polish (v)** To produce a highly finished or polished surface by friction, using a very fine abrasive.

**Profile (v)** To cut any desired outline by moving a small rotating cutter, usually with a master template as a guide.

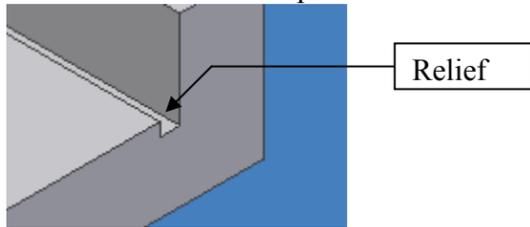
**Punch (v)** To cut an opening of a desired shape with a rigid tool having the same shape, by pressing the tool through the work.

**Quench (v)** To immerse a heated piece of metal in water or oil to harden.

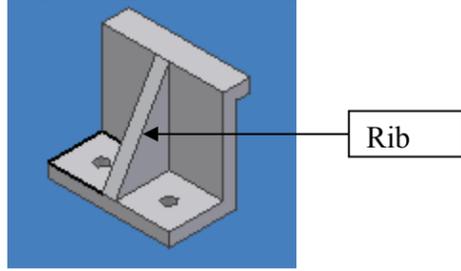
**Rack (n)** A flat bar with gear teeth in a straight line to engage with teeth in a gear.

**Ream (v)** To enlarge a finished hole slightly to give it greater accuracy, with a reamer.

**Relief (n)** An offset of surfaces to provide clearance for machining.



**Rib (n)** A relatively thin flat member acting as a brace or support.



**Rivet (v)** To connect with rivets or to clench over the end of a pin by hammering.

**Round (n)** An exterior rounded intersection of two surfaces.

**SAE** Society of Automotive Engineers

**Sandblast (v)** To blow sand at high velocity with compressed air against castings or forgings to clean them.

**Scleroscope (n)** An instrument for measuring hardness of metals.

**Scrape (v)** To remove metal by scraping with a hand scraper, usually to fit a bearing.

**Shape (v)** To remove metal from a piece with a shaper.

**Shear (v)** To cut metal by means of shearing with two blades in sliding contact.

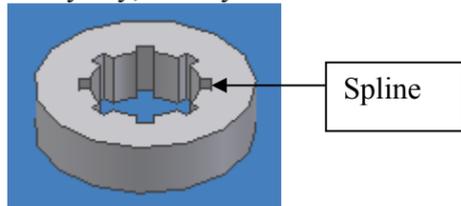
**Sherardize (v)** To galvanize a piece with a coating of zinc by heating it in a drum with zinc powder, to a temperature of 575-850 degrees.

**Shim (n)** A thin piece of metal or other material used as a spacer in adjusting two parts.

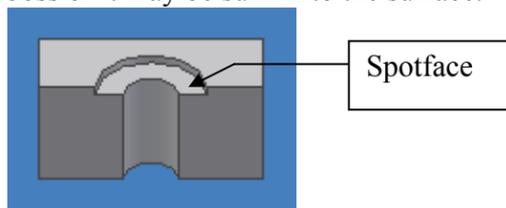
**Solder (v)** To join with solder, usually composed of lead and tin.

**Spin (v)** To form a rotating piece of sheet metal into a desired shape by pressing it with a smooth tool against a rotating form.

**Spline (n)** A keyway, usually one of a series cut around a shaft or hole.



**Spotface (v)** To produce a round spot or bearing surface around a hole, usually with a spotfacer. The spotface may be on top of a boss or it may be sunk into the surface.



**Sprue (n)** A hole in the sand leading to the gate which leads to the mold, through which the metal enters.

**Steel Casting (n)** Like cast-iron except that in the furnace scrap steel has been added to the casting.

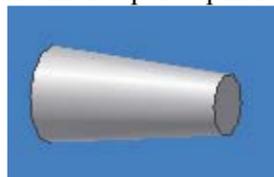
**Swage (v)** To hammer metal into shape while it is held over a swage, or die, which fits in a hole in the swage block, or anvil.

**Sweat (v)** To fasten metal together by the use of solder between the pieces and by the application of heat and pressure.

**Tap (v)** To cut relatively small internal threads with a tap.

**Tape (n)** Conical form given to a shaft or a hole. Also refers to the slope of a plane surface.

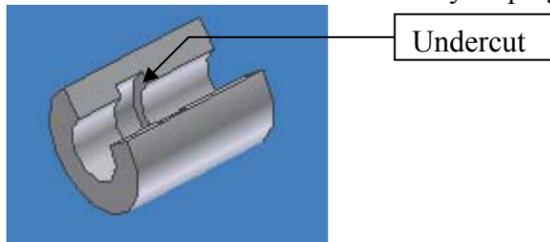
**Taper pin (n)** A small tapered pin for fastening, usually to prevent a collar or hub from rotating on a shaft.



**Taper reamer (n)** A tapered reamer for producing accurate tapered holes, as for a taper pin.

- Temper (v)** To reheat hardened steel to bring it to a desired degree of hardness.
- Template or templet (n)** A guide or pattern used to mark out the work, guide the tool in cutting it, or check the finished product.
- Tin (n)** A silvery metal used in alloys and for coating other metals, such as tin plate.
- Tolerance (n)** Total amount of variation permitted in limit dimension of a part.
- Trepan (v)** To cut a circular groove in the flat surface at one end of a hole.
- Tumble (v)** To clean rough castings or forgings in a revolving drum filled with scrap metal.
- Turn (v)** To produce, on a lathe, a cylindrical surface parallel to the centerline.
- Twist drill (n)** A drill for use in a drill press.

**Undercut (n)** A recessed cut or a cut with inwardly sloping sides.

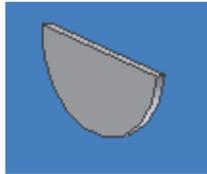


**Upset (v)** To form a head or enlarged end on a bar or rod by pressure or by hammering between dies.

**Web (n)** A thin flat part joining larger parts. Also known as a rib.

**Weld (v)** Uniting metal pieces by pressure or fusion welding processes.

**Woodruff key (n)** A semicircular flat key.



**Wrought iron (n)** Iron of low carbon content useful because of its toughness, ductility, and malleability.