

Bell & Hyman Technical Dictionary

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Introduction

This dictionary is designed for students in technical fields, especially those for whom English is not their native tongue. It contains some 1000 entries, each of which has a short definition written in simple easily understood English. While the basic defining vocabulary is restricted to some 2000 general words, it is necessary in a dictionary of technical terms to include some technical words in the definitions that are not within the defining vocabulary. In general, however, technical words used in definitions will themselves be entries in the book.

Most of the entries are accompanied by clear line drawings of the object or component being defined. Components drawn within the context of the object of which they form a part are either clearly labelled or shaded for easy identification. Some illustrations show several types of tool or part under one heading. For example, the entry for **nut** is accompanied by an illustration of seven different types of nut. Each of these nuts has its own heading in the dictionary with a cross reference to **nut**, where it is illustrated.

The entries are all nouns and include hand and machine tools, general workshop equipment, parts of a car, engineering-drawing tools and terms as well as common electrical, building, and plumbing terms. In addition some entries for laboratory terms and words used in heavy industry are included.

In addition to the usual type of cross reference some words in a definition are preceded by an asterisk (*). This is to indicate that further information relevant to the entry being read will be found at the entry for the word asterisked. This does not mean that every entry word in the dictionary carries an asterisk when it appears in a definition. The asterisk is only used if the reader is advised to seek further information elsewhere.

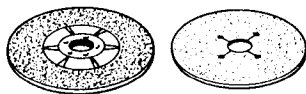
There are differences between American and British usages of technical words, and these differences can sometimes lead to confusion. The dictionary therefore lists common US variants of British headwords.

In the appendices at the end of the book, a number of illustrations are collected together for drawing instruments, tools for woodworking, tools for metalworking, power tools, and car parts. The appendices also give tables of units and conversion factors.

A

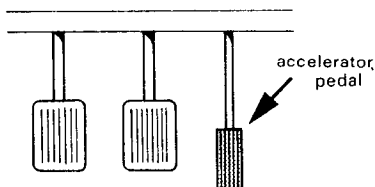
abrasive, a substance used to rub or grind down a surface; e.g. sand, *emery, carborundum.

abrasive disc, a disc coated with an abrasive for rubbing or grinding down a surface. It is usually turned quickly by an electric hand drill.

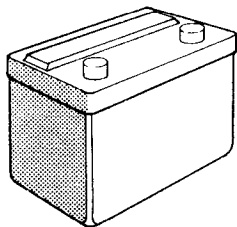


a.c., see alternating current.

accelerator, the pedal that increases the speed of a car or other vehicle. *U.S. name* gas pedal.

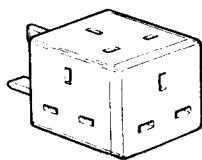


accumulator, a device for storing electricity consisting of one or more electric *cells. An accumulator can be recharged by passing a current through it. The battery in a car is a type of accumulator. *Also called (especially in the U.S.)* storage battery.



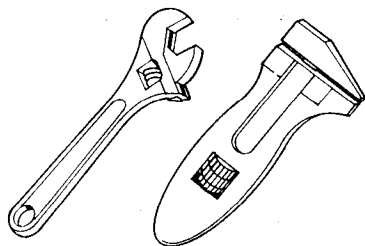
acute angle, see angle.

adapter, a type of electric plug used to join a number of plugs to one socket.

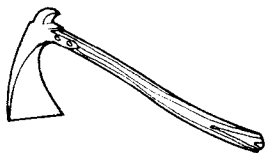


adhesive, a substance used to stick surfaces together; e.g. *glue, cement.

adjustable spanner, a type of *spanner that can be changed in size. Adjustable spanners can be used with nuts of different sizes. *See also* wrench.

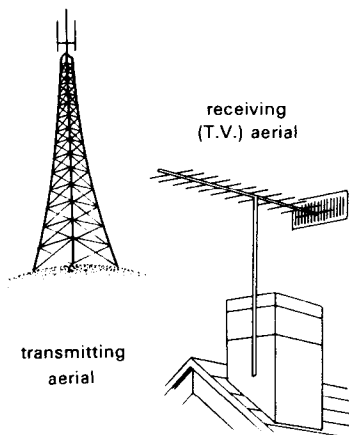


adze, a tool used to cut wood. The blade of an adze is joined at right angles (cross-ways) to the handle. *U.S. spelling* adz.

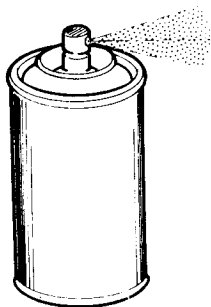


aerial

aerial, a wire or metal rod or frame used to send out or pick up radio waves. *Also called (especially in the U.S.) antenna.*



aerosol, 1. a fine spray of drops of liquid.
2. a can for producing a fine spray of paint, polish, etc.



air brake, a type of vehicle *brake worked by compressed air.

air-cooled engine, any *engine that is cooled by a flow of air only (i.e. not by a flow of water).

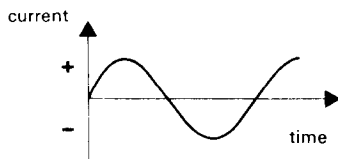
air-cushion vehicle, *see* hovercraft.

Allen key, a metal bar with a hexagonal cross section, used to tighten nuts that have a hexagonal recess (hole) in the head. *Also called* hexagonal socket wrench.

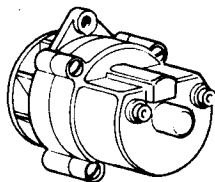


alloy, a mixture of two or more metals, or of a metal and nonmetal. The properties of an alloy differ from those of its components. Brass is a widely used alloy of copper and zinc; steel is an alloy of iron and carbon with other elements added for special purposes.

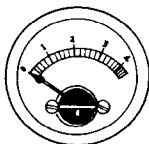
alternating current (a.c.), electric current that flows alternately in one direction and then in the other. *Compare* direct current.



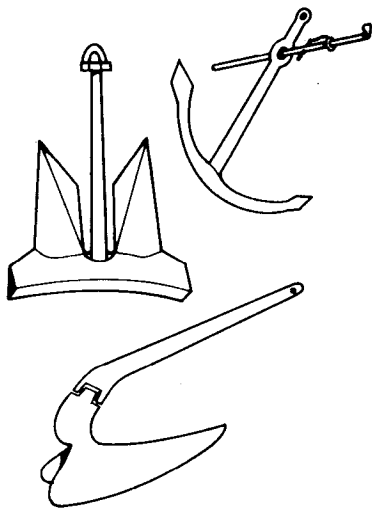
alternator, a type of electric *generator used to produce alternating current. *See also* dynamo.



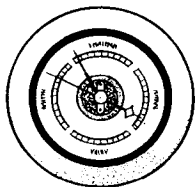
ammeter, an instrument that measures electric current (especially in amperes).



anchor, a device used to hold a ship in one place. The anchor buries itself in the bottom of the sea, river, or lake. It is held to the ship by a chain or rope.



aneroid barometer, an instrument used to measure the pressure of the atmosphere.

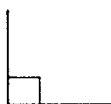


It has a pair of metal bellows from which the air has been removed. A pointer is joined to the bellows by levers. The bellows move when the pressure of the atmosphere changes. This causes the pointer to move. *See* barometer.

angle, the space between two lines (or planes) that meet at a point. Different kinds of angles have different names.



acute angle
(less than 90°)

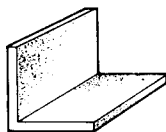


right angle
(90°)

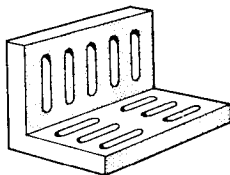


obtuse angle
(more than 90°)

angle iron, a steel bar with an L-shaped cross section. *Also called* steel angle section.



angle plate, a metal plate to which parts are fixed for machining or marking out. It is usually made of cast iron and accurately machined. Parts can be held by bolts through the slots.



annealing

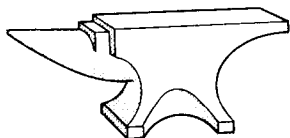
annealing, the process of heating and then cooling a material (e.g. a metal) to remove strains in the material.

anode, an *electrode with a positive electric charge.

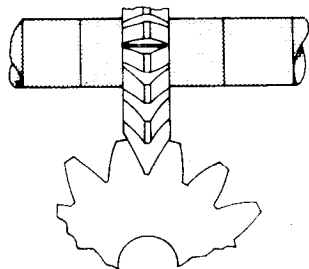
anodizing, the process of covering a metal with a hard layer of metal oxide by making it the *anode in an electrolytic *cell. Usually, the cell contains sulphuric acid or chromic acid. Anodizing is often used to coat aluminium with oxide.

antenna, *see* aerial.

anvil, a shaped block with a hardened steel face on which a piece of metal is held during forging.

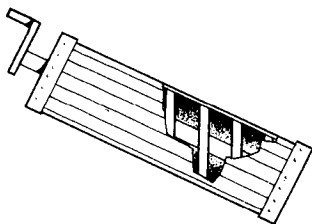


arbor, a rotating bar that carries a cutting tool in *lathes or *milling machines. It is used to hold a *reamer or a milling tool. The cutting tool is placed on the arbor (shaded in the picture). The arbor is then put in the machine and turned quickly.



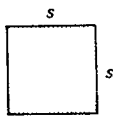
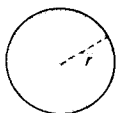
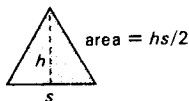
arc, 1. part of the circumference of a *circle (or other curve).
2. *see* electric arc.

Archimedean screw, a type of pump for lifting water, consisting of a large inclined screw in a hollow tube.

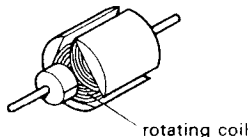


arc welding, a method of welding metal parts together using the heat produced by an *electric arc.

area, the space occupied by a surface. The area of a shape is usually worked out by a single formula.

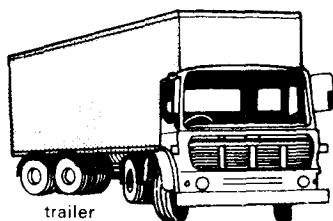


armature, 1. one of the important units in an electric machine. It consists of a coil or coils and an iron core made from pieces of silicon steel.



2. any part of an electrical machine in which a voltage is produced by a magnetic field.

articulated lorry or truck, a lorry that has two parts (*a tractor and a trailer*) connected by a pivoted bar. This allows the two parts to be at an angle to each other when cornering.

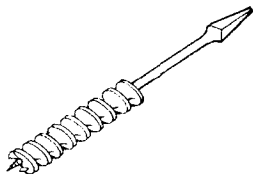


trailer

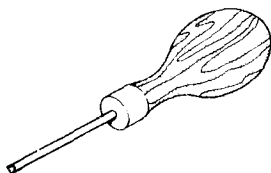
tractor

atmospheric pressure, the pressure of the air on the surface of the earth. The average value is 101 325 pascals (14.7 lbs per sq. in.) at sea level. This is equal to a pressure of 760 millimetres of mercury.

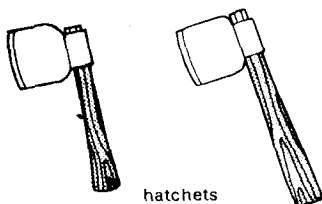
auger, a tool used to bore holes in wood or in the ground. An *auger bit* is a type of drill *bit used with a *brace.



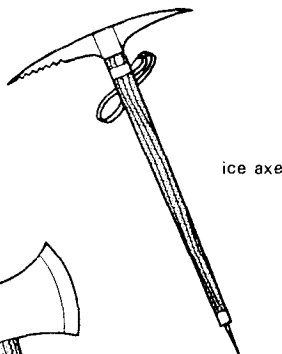
awl, a short pointed tool used to make small holes in leather, wood, etc. *Also called* bradawl.



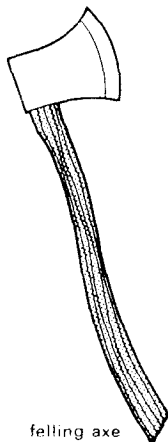
axe, a tool with a wooden handle and metal blade, used to cut down trees, chop wood, etc. *U.S. spelling* ax.



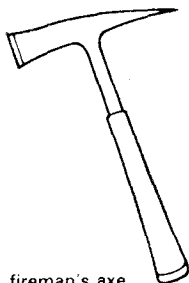
hatchets



ice axe



felling axe



fireman's axe

axis

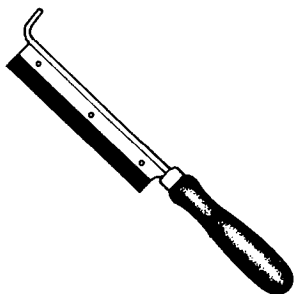
axis, 1. a line about which something turns.

2. a line dividing a shape into two equal shapes. *See also* x-axis, y-axis.

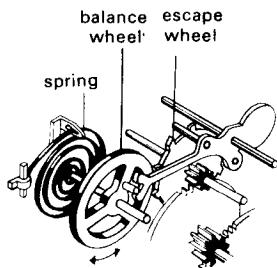
axle, a bar (usually metal) on which a wheel turns. The axle may drive the wheel or the wheel may turn freely on the axle. *See also* suspension system.

B

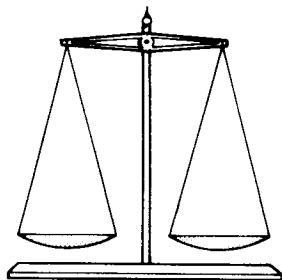
back saw, a type of *saw used to cut wood. A back saw has a piece of metal on the back of the blade to stiffen it.



clock that swings back and forth against a *hairspring to regulate the *escapement.



balance, an instrument used to weigh objects. A *beam balance* has two pans, one on each end of an arm. The arm is held on a pivot at the centre. The object is placed in one pan and standard weights are added to the other pan. *See also* spring balance.

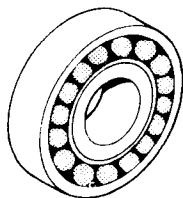


balance wheel, a wheel in a watch or small

ball and socket, a form of flexible joint between two rods. One rod has a ball at its end; the other has a hollow cup into which the ball fits.



ball bearing, 1. a form of *bearing in which steel balls roll between a rotating shaft and a metal tube. The rolling balls reduce friction.

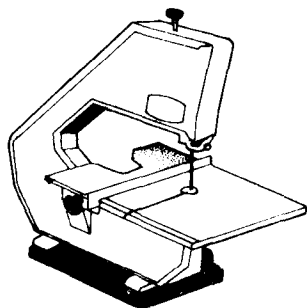


2. one of the steel balls used in this type of bearing.

ball-peen hammer

ball-peen hammer, *see* hammer.

bandsaw, a mechanical *saw in which the blade is an endless steel loop running over two wheels.



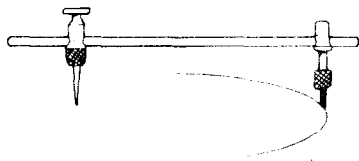
bar magnet, a *magnet made of a straight metal bar.



barometer, an instrument used to measure *atmospheric pressure. There are two types: the *mercury barometer and the *aneroid barometer.

battery, a number of electric *cells connected together to give a source of electric current. *See also* accumulator.

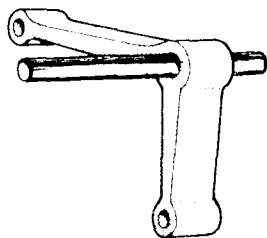
beam compass, a type of compass used for drawing large circles or arcs. *Also called* beam trammel, trammel.



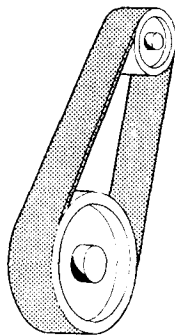
beam trammel, *see* beam compass.

bearing, a support or guide for a rotating shaft or the surface between a reciprocating part and a crank. In a *plain bearing* the two metal surfaces bear directly on one another. *See also* ball bearing, roller bearing, thrust bearing, bush.

bell crank, a lever that has two arms at an angle (usually at right angles), with the pivot at the point at which the arms meet.



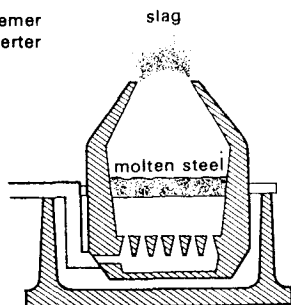
belting, material used to make belts; e.g. strips of rubber, fabric, leather, etc.



bench, 1. a strong wooden or metal work table often with a vice attached to it.
2. the flat surface of a machine tool, such as a circular saw, on which the workpiece is laid.

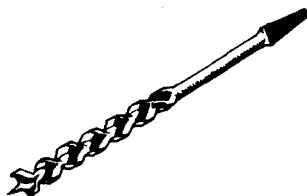
Bessemer converter, a large furnace in which iron is converted into steel. The iron is melted and air is blown through to reduce the amount of carbon.

Bessemer converter

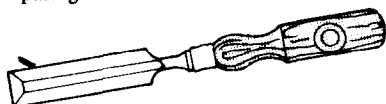


bin, a container used to store grain, refuse, etc.

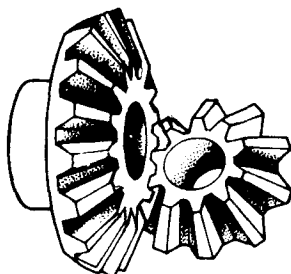
bit, a tool used to bore holes, used with a *drill or *brace. See also countersink bit.



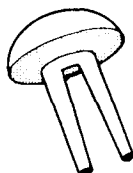
bevel-edge chisel, a type of *chisel used for paring wood.



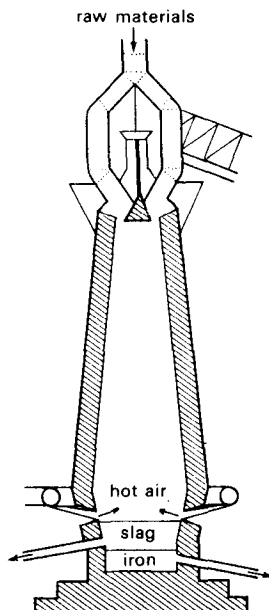
bevel gear, a type of *gear wheel with the teeth at an angle to the axle of the gear wheel.



bifurcated rivet, a type of *rivet in which the *shank is split into two arms. These are bent apart to hold the rivet in place.

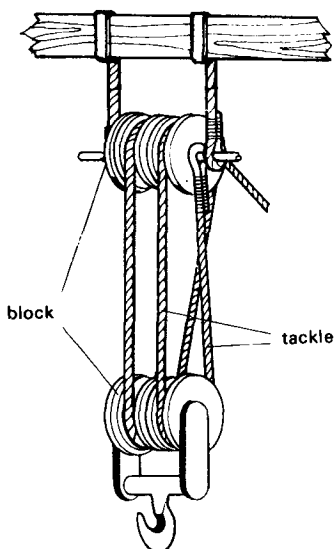


blast furnace, a vertical cylindrical furnace in which metals (iron, copper, etc.) are extracted from ores by heating. A blast of preheated air is forced through the ore, scrap, and solid fuel, which is fed into the top of the furnace. The molten metal is run off from the bottom of the furnace.



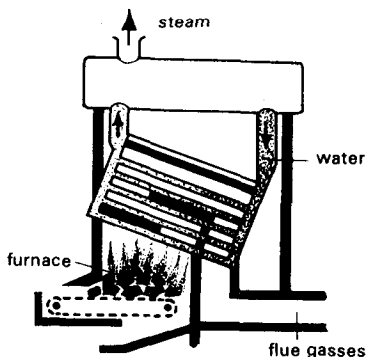
block and tackle

block and tackle, a system of ropes and pulleys used to raise heavy loads. The pulleys are held on a frame (the *block*).

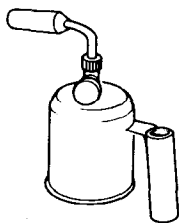


blowtorch, a hand-held burner mixing gas (e.g. acetylene) with oxygen to produce a hot flame for *oxyacetylene welding or *flame cutting.

boiler, a metal tank in which water is heated to turn it into steam.

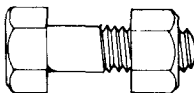
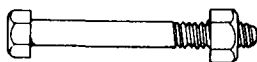


blowlamp, a small lamp that produces a very hot flame used to melt metal, remove paint, etc. It works by forcing paraffin through a jet by pressure or, as in the illustration, by burning butane gas from a small renewable pressurized container.

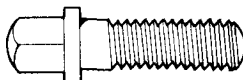


blowpipe, a metal pipe used to blow air into a flame to make it hotter.

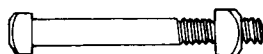
bolt, 1. a metal rod with a head at one end, often hexagonal, and a screw thread at the other to take a nut. *See also* rag bolt, U-bolt.



coupling bolts



collar bolt



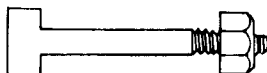
square-head bolt



coach bolt



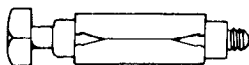
eye bolt



T-head bolt



hook bolt

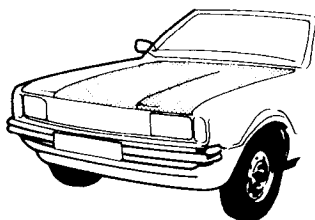


expansion bolt

2. a rod or bar that forms the part of a *lock that can be opened or closed using a key.

3. a bar that can be slid into a socket to fasten a door, gate, etc.

bonnet, the part that covers the engine at

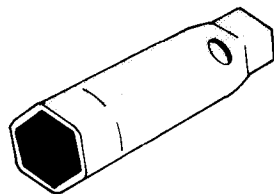


the front of a motor vehicle. *U.S. name hood.*

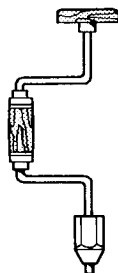
bottom dead-centre, the position of a piston in an *internal-combustion engine when it is at the bottom of its stroke, i.e. nearest to the crankshaft. *Also called outer dead-centre. See also top dead-centre.*

bow-spring compass, *see* spring-bow compass.

box spanner, a spanner made from a steel cylinder with a hexagonal end, which fits over the nut to be tightened or loosened. The spanner is turned by a *tommy bar passing through holes in the spanner.



brace, a tool used to bore holes. It has a socket at one end to hold a drilling *bit and a cranked handle by which it is turned. *See also wheel brace.*



brad, a small nail with a head that projects on one side only or is flush with the sides.

bradawl, *see* awl.

brake

brake, the device that slows down or stops a moving vehicle or machine part. *See also* air brake, disc brake, drum brake, vacuum brake.

brake cylinder, the cylinder that houses the hydraulically operated piston of a braking system in a road or rail vehicle. The hydraulic pressure that operates the brake cylinder originates in the *master cylinder.

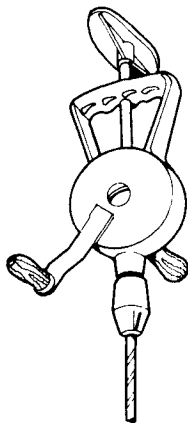
brake lining, a strip of material, of an asbestos composition, that is fixed to a *brake shoe in a *drum brake. The brake lining comes into contact with the drum when the brake is applied.

brake pads, the parts of a *disc brake that come into contact with the disc attached to the wheel hub when the brake is applied.

brake shoe, the curved metal part of a *drum brake to which the *brake lining is attached.

brazing, the process of joining two metal surfaces by fusing a thin layer of brass or high-melting solder between them. *See also* soldering, sweating.

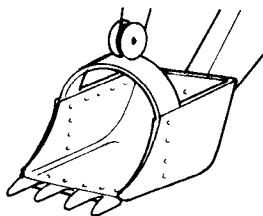
breast drill, a type of hand-operated drill that is held firm against the chest when used.



bricklayer's hammer, *see* hammer.

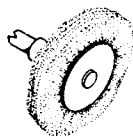
brush, an electrical conductor made of carbon. Brushes are used to feed the current to the *commutator of an electric motor. They also take the current from the rotating part of an electric generator.

bucket, 1. a bucket-shaped scoop on a mechanical shovel.

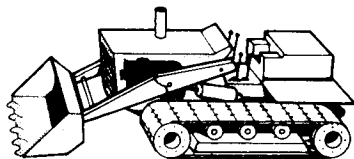


2. a cupped blade on the outer edge of a water wheel, etc.

buffing wheel, a device consisting of a wheel covered with a soft material, used for polishing.

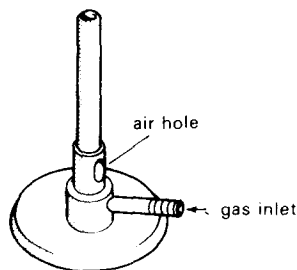


bulldozer, a tractor with caterpillar tracks and a scoop at the front, used to move earth, rocks, etc., and to level the ground.



Bunsen burner, a gas burner widely used in laboratories. It consists of a metal tube with a gas jet and an air valve at the base.

The heat of the flame can be controlled by adjusting the air valve.



bush, a thin metal tube that is inserted into a hole in a machine or part to provide a bearing surface or guide for a shaft.

