

Sharpening drills and tools

In order to ensure complete accuracy in the workshop, it is essential for drills and other tools to be sharp. Details of the correct methods of sharpening these tools' are given

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MAINTEINING. DRILLS, Centre punches, chisels, scrapers, etc., keen and accurate is one, at least, of the secrets of producing good work. It involves the use of grinding, wheel, hand-hones and oil-stone.

Hand hones are small abrasive slips obtainable in various shapes and sizes, for finishing tools to a fine edge after grinding. They are usually rubbed on tools. The oil stone, (a larger abrasive block), rests on the bench while tools are applied for finishing.

Thin oil, such as cycle oil, should be used on an oil stone to float particles of metal away; hand hones may also be fed with thin oil and both types, when dirty and clogged, can be scrubbed in paraffin. As with grinding wheels, the area of working should not be restricted for the hone or stone to become locally worn.

For work on the grinder, whether or not preliminary, it is desirable for the drive to the wheel to be by power or foot treadle, leaving both hands free for the tool.

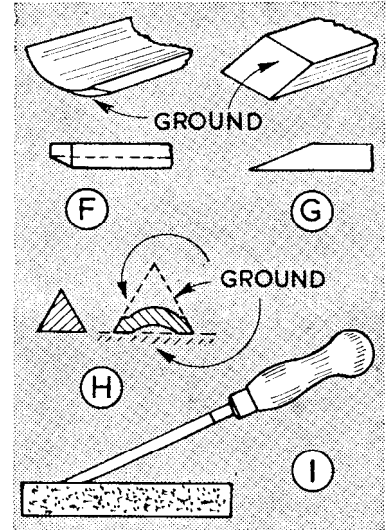
Drill sharpening

For most work, twist drills have an included angle of 118 deg. and a clearance from each cutting edge of about 12 deg. The cutting edges or lips are straight and equal as seen in plan and clearance is curved on large drills, though it can be in the form of a flat on very small drills.

The angles, while desirable, are not rigid in that a drill would not cut if ground otherwise. In practice, slight variations occur and even where a jig is available for maintaining accurate angles, free-hand grinding is often preferred.

In sharpening a drill, it is applied to the face or the periphery of the wheel, horizontally and at the appropriate angle A, with the cutting edge horizontal. Care is observed that the cutting edges X, Y, are maintained as nearly as possible the same. Holding the drill as at A in contact with the running wheel, the nose is then lifted as at B, thus providing the clearance as at C.

A small drill can be applied twice to the grinding wheel at an angle



producing a flat for clearance at each cutting edge. On a very tiny drill the flats can be produced rubbing on an oil stone, or hand-honing with the drill in parallel-jaw pliers.

Punches and chisels

A centre punch with an angle of 60 deg., D, is sharpened by applying to the periphery or face of the wheel, twisting between fingers. Direction of twisting is not important, but the rate should be fast to avoid flats.

A tubular punch E for making holes in gaskets can be ground in a similar fashion. A chipped or ragged cutting edge, however, should first be squared on the face of the wheel. Afterwards the chamfer can be produced. Overheating can be avoided by dipping in water, and the chamfer hand-honed at the finish.

A gouge or half-round chisel F can be ground, not by twisting, but turning with wrist movements, firmly held and finally hand-honed.

With a normal wood chisel G, care is required to produce a true flat, a square cutting edge and not to over-heat. Frequent cooling is essential and a coarse wheel initially desirable. Badly damaged edges involve extensive grinding, without which cutting angles are changed and the edges becoming "dubbed off."

Triangular and hollow-ground scrapers H can be ground flat on the faces for sharpening, then hand-honed. A wood chisel, however, is better finished or maintained sharp on an oil stone I, rubbing at the appropriate angle, then passing the flat side of the blade along the stone to remove the feather edge.

