

ROTATION AND DRESSING IN GRINDING

By GEOMETER

IN any grinding where the work revolves, it is necessary to take account of the directions and rates of rotation of the grinding wheel and workpiece. It is otherwise where the work is flat or contoured by a shaped wheel and clamped stationary, or where it is traversed by a slide past the face or periphery of the wheel. Direction of rotation then has little significance—subject only to the cut being applied against the wheel, if there is any possibility of “gathering on” occurring. It simply means the feed is given from the appropriate side.

In cylindrical grinding with the work rotating, the same principle obtains—or should obtain—if possible. It does so in the case of a production grinder as at A1, where grinding wheel and workpiece turn in the same direction, forward to the operator as in ordinary turning. Peripheries of grinding wheel and work run in opposition with downward turning of the grinding wheel, for coolant and swarf to go down to the base of the machine.

In the normal set-up of a toolpost grinder the contrary can and often does occur as at A2. The grinding wheel turns downwards so grit and swarf and possibly sparks are not flung upwards, and the work revolves in the normal direction. This reduces the relative surface speed and admits of gathering on at times if the work when between centres, runs loose. The faster the lathe turns the greater is the loss of surface speed, and a trace of “pattern” may appear on the surface.

Reversing the lathe

Naturally for good results the effect must be minimised or overcome—which may be done in several ways. Without trouble the lathe may be run in the slowest backgear speed; and the largest grinding wheel that can be accommodated will be better than a small one, as having a higher surface speed for a given r.p.m. To reverse the lathe, and lacking any other solution, a pulley may be attached to the stud or quadrant wheel of the screwcutting train—though not, of course, running the leadscrew. Changing the grinder leads may be possible

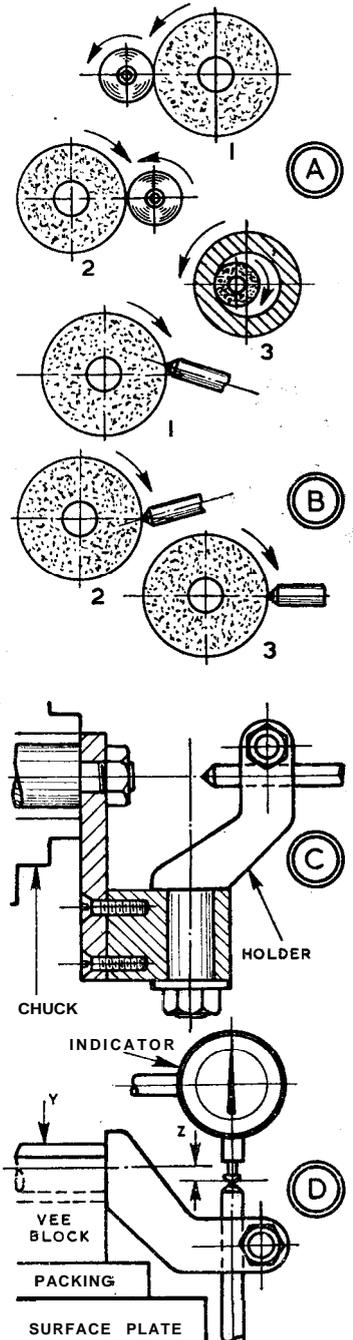
with attention to the upward fling of grit and swarf. Temporarily changing the lathe motor leads is another possibility. Obviously there is no problem where the lathe motor has a reversing switch—nor for internal grinding where the normal direction of rotation is correct, as at A3.

Wheel Dressing

Dressing the wheel, too, has to be taken into consideration in achieving good results while eliminating risk. In cylindrical grinding the whole periphery of the grinding wheel should lie parallel to that of the workpiece; for if not, though the work may be performed, there is likely to be a trace of spiral on its surface. To ensure satisfaction following the set-up the wheel should be lightly dressed.

To dress the wheel periphery straight the diamond dresser can be mounted like a fixed flycutter tool in a mandrel, which can be mounted in the chuck. This is then held for the dresser to be horizontally with its tip touching the grinding wheel at the centre line. A thing to avoid in dressing is an upward tilt of the tool, as at B1, since movement may result in a dig-in which could be more or less disastrous. A downward tilt as at B2, may obtain, on occasion where the tool-mounting is fixed and the wheel traversed past it. But on a lathe where the wheel itself should be located at centre height, the horizontal mounting as at B3, is to be recommended.

To radius a wheel for grinding balls or grooves a holder which can be swung is required, and the arrangement can be as at C. The tool is clamped in the holder which can be turned in the bracket, held by a spigot in the chuck. Tool-setting can be as at D with the swinging holder in a V-block on packing on the surface plate, a reading being taken by indicator at Y, then allowance made for the distance from centre Z.



OVER 260 hints and gadgets for improving workshop efficiency are contained in *Aids to Workshop Practice*, by C. T. Bower (Odhams, 18s.). Among the subjects dealt with are assembly methods, marking out, clamping, electrical work, power transmission and lathe work. Most of the ideas and devices are applicable to the requirements of both amateur and professional craftsmen, and though the emphasis is on metalwork, many of the methods can be adapted to woodwork and other allied crafts.—E.T.W.