Beginner's Workshop

CONTOURS

Geometer draws attention to a problem which can be resolved if ...

WHILE IT CANNOT be claimed that contours or profiles are easily produced or duplicated in reverse, the problem is far less formidable than might appear at first sight-given time, care and some acquaintance with the principles, which, in general, differ little whatever the size or class of work.

In the case of a reverse duplicate, the problem is easily solved if the existing contour is accessible in that the part or material containing it can be laid flat on the other material and marked round. Then it simply means cutting, filing, finishing, etc., as necessary. A contour, however, which is inaccessible in this sense because of its position or the form of the part must be duplicated by other means.

The simplest case, perhaps, is in fitting line to an uneven wall or a board in an irregular opening. Assuming the contour to be as ***A,*** consisting chiefly of straight lines, the edge of the material, lino or board, represented by ***T-Tl.,*** is pushed squarely up to the out-juttmg face. Then the widest gap is measured with rule or dividers, this being between points Pl-P2.

Two methods

Working squarely back from the edge of the material, this distance is marked at all the other positions along the profile (shown by pairs of arrows), and using a straight-edge the different points are joined when the result is a profile as shown by the dashes. After this the material has only to be cut.

The principle is the same if the contour is irregular, B, though for convenience the method differs. A small block of wood is cut the width of the widest gap or slightly in excess. Then the block is brought along the contour, marking with a pencil or scriber at the edge. Afterwards the material is cut to the outline produced.

The method in engineering of setting out contours is the same in principle as the above, employing co-ordinates. These are simply pairs of dimensions given horizontally and vertically to locate points, which, when sufficiently numerous, form the contour.

Thus, at C, the distances represented by X, XI, etc., horizontally, and their counterparts Y, YI, etc., vertically locate points which, on a piece of steel plate for example, can be centre punched-then a fair curve scribed through the points. Afterwards the surplus material can be sawn and carefully filed away to the curve-which is the method for hand production of form gauges.

The gauge at D is used to obtain the shape of an existing contour for checking another or marking a similar or reverse profile. Thin metal plates--all the same length and slotted to accept a bolt holding them together admit of adjustment. The bolt is loosened for the plates to be fitted to the contour, then retightened. Small features can thus be obtained for making a corresponding part to fit, or roughing out a contour gauge or form tool-whether for an engineering component, a fancy candlestick or table leg.

For a form tool or contour gauge, final fitting is done on the component, checking against a light and reducing the high spots until the profiles correspond as required.

Temporary contour gauges can be made from sticks of lead,. tin or solder, which deform but retam their shape. A stick is bent along a large curve, ***E,*** and when the component is small and harder than the stick, the latter can be roughly cut or filed, then tapped or squeezed on the component to obtain the shape.

Complicated flat contour gauges can be built up in parts by overlapping and holding with screws or bolts, ***F***, each part of the profile having been obtained with a solder gauge for marking out. In repairing car body work, the contour can be taken from an undamaged side in this manner.

The curvature of lenses or spheres may be compared with a dial gauge, G, commonly used by opticians. A circular base or a base having three legs mounts the gauge, which is then placed on the original or " master " lens or sphere to set the needle reading.