

Halved patterns

By Geometer

PRODUCTION of single simple patterns serving for casting both halves of symmetrical bolted-up components and of complete patterns in detachable halves when they contain numerous features, is often advantageous to reduce work in patternmaking and obviate difficulties that could arise in moulding.

As an example, the crankcase of a two-stroke engine, divided on the vertical centre line, may consist of identical halves cast from one pattern that has been made with care—when it would be needless to have made two identical patterns. On a similar principle, should one half of such a bolted-up component require an additional feature of a simple nature, the case can sometimes be met by sawing or machining that portion from the other casting.

Again, should the feature be too large for this method—or its removal from one casting require too much effort—it may sometimes be arranged for an additional piece to plug into or screw to the pattern for producing the more complicated casting.

In the case where a pattern is a simple type but contains numerous features each side of the centre line, difficulties may occur in moulding when one half has to be drawn off the pattern. But by making the pattern in halves, joined on the centre line, the pattern itself can separate, and each half then be carefully removed from the mould.

Where a solid pattern would be from a single piece of wood, a halved type demands two pieces half the section and located by two or four dowels, as at A, T, T, though other locating means are practical. A sheet metal drilling template will ensure accuracy of dowel holes, which should be clearance in one half of the pattern and interference in the other for the dowels to tap in. Alternatively, woodscrews entered to leave the plain portions of the shanks partly projecting, with the heads then cut off, can serve for dowels.

Turning of a halved pattern can be done in the lathe with hardly more trouble than for a solid type. If the dowelled halves are fairly short they can be mounted in a four-jaw chuck and adjusted true. If they are lengthy, metal plates can be attached at the ends, U, V, for a set-up to be obtained between centres, when the plate at the driving end can be long enough to engage the pin in the catch plate. In some instances, of course, woodscrews can be used to keep the halves together.

The bosses W—“complicating” features—may be solid, dowelled into the halves, and fillets made with plastic wood; but the bosses X, similarly circular, must be halved along the centre line, like the main portion of the pattern. These bosses are, of course, turned from two pieces of wood like the main portion, and one half attached to each half of the pattern.

In the case of a pattern for a crankcase casting, as at B, a half boss can serve as a chucking piece for machining the cylinder spigot and platform, since with the crankcase halves bolted up, the two half bosses form a round piece that can be chucked with reasonable accuracy after machining the outside. Afterwards they are cut off.

To serve as a chucking piece, a half boss should have about $\frac{1}{16}$ in. added to its flat face (a thin strip of wood), to clean off when the face of the casting is machined. Then the two pieces will be substantially round with the halves bolted up. For machining the outside, abutting faces of the castings can be marked and provided with centres at Y, Z. Then after bolting up a set-up can be obtained between centres.

Ordinary half bosses, as at A, can be let into each half of the pattern as at C, boring on the centre line. For this a long or awkward pattern may be clamped with worm-drive clips and mounted by light angles on the faceplate. Flat lugs, as at D, can be dowelled or let into grooves, and accurate radii formed by filing to steel discs.

