

FEATURES of PATTERNS

By GEOMETER

ACCURACY in details, alignment of chucking pieces, production and application of simple lettering are among the features of patternmaking particularly likely to occur in model construction. And, fortunately, the problems involved are for the most part easy, to solve.

The most revealing case is where a single simple pattern is to be employed for the matching halves of a component—such as a single pattern for producing the two halves of a two-stroke crankcase. When the two similar castings are machined and placed face-to-face, the bosses, lugs, etc., on the right of one casting are on the left of the other, and malalignment

of cardboard to use as a backing.

With a sharp HB pencil the outside shape of the pattern is marked, then the paper is removed, turned over, and applied to the pattern in a strong light. Errors can be seen and suitably corrected by re-aligning or filing the features. Thus, at A, the small lugs O, P, Q, R, are in alignment on paper and pattern; but there are errors at the supporting lugs S, the cylinder platform T, and the chucking piece U.

Given a little care, this is an extremely accurate principle for symmetrical objects. In gauge-making, for example, the tool or part can be laid on transparent plastic, and a sharp-pointed scriber run round, when errors of no more than about 0.003 in. can be seen:

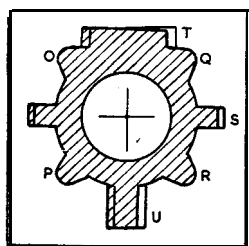
To ensure accuracy on chucking pieces several methods are possible. Often the piece can be turned integral with the pattern or the pattern can be marked with opposing centres. These are lightly drilled, then the drilling for the spigot hole is done with a drill running the chuck, supporting and feeding the pattern from the tailstock centre. Again, pins or dowels can be used to locate chucking pieces or parts of patterns.

An example of a pattern combining two methods is that for a flanged elbow, as at B. One part, its flange, and the chucking piece V are machined together, then drilled crosswise for a pin to locate the other part X and its chucking piece W. Chucking pieces are, of course, cut off after use.

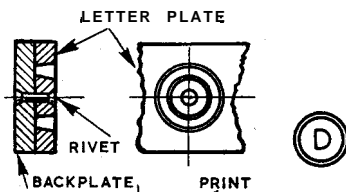
Raised lettering, as at C, can be produced by cutting and filing the letters from brass sheet 1/16 in. or so thick, then sweating to a brass backing plate and attaching to the pattern. The backs of the letters and the front of the plate should be tinned, the letters placed on, aligned and weighted, and the plate heated from below to fix them. Hollow lettering can be cut in one plate and this sweated to a backing plate, small portions of letters? such as the centre of the O at D, being attached with a tiny rivet.

Lettering must push straight into the mould—a requirement influencing construction of the pattern. When it is on a vertical face on the side of a bed of a model horizontal engine, as at E and F, section and part plan, moulding must be on the vertical centre line, using a halved pattern when there is lettering both sides. Lugs, Y, Z, must be on the side, or an end lug must be solid, and cut away on the casting.

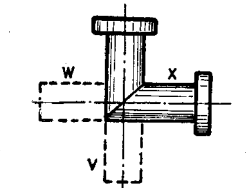
For a hollow bed, as shown, a core box is required, and the pattern may have about four circular core pins.



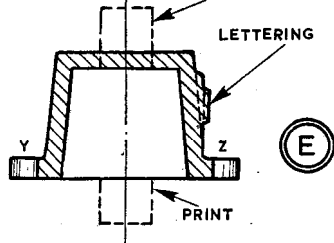
(A)



(D)



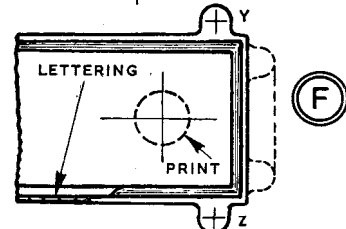
(B)



(E)



(C)



(F)

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If a certain measure of crudity can be tolerated in a component finished from a casting, or if all-over machining is contemplated, then a lesser degree of accuracy can be accepted in the pattern than would otherwise be essential. But where accuracy in the as-cast condition is required reasonable care is necessary.

in the pattern is obvious. However, a check on this can be made in production.

The face of the pattern which is to be the machined face of the casting should be placed down on a piece of tracing paper; if there is an obstructing core print, a hole should be made in the paper and a similar one in a piece