



**AMATEUR MECHANICS—CENTREING AND STEADYING.**

To centre a cylindrical piece of metal readily and accurately is a very simple matter when the workman is provided with tools especially designed for the purpose, and it is not difficult when an engine lathe or even an engine rest is available; but to do it easily and properly in an ordinary plain foot-lathe may puzzle some of the amateur mechanics. Although some of those methods are well-known they will nevertheless be described for the benefit of some who may require the information. The method of centreing shown in Fig. 1 is one of the most common where the lathe is provided with an engine rest. A forked tool, A, is clamped in the tail post in such a position that a line drawn from the point of the tail centre will bisect the angle of the fork. A square-pointed centre, G, is inserted in the tail spindle and moved against the end of the rod being centered with a slight pressure, the tool, A, being at the same time moved forward by the screw of the engine rest until the rod turns smoothly in the fork and the square-pointed centre has found the centre of the rod; the tail spindle is then moved forward until the cavity is sufficiently deep to permit of starting the centre drill. The angle of square centre, G, for very hard material, should be a little more obtuse than that shown in Fig. 4. In any case, it should be of good material and well tempered.

In Fig. 2 is shown a centreing tool which is designed to take the place of the engine rest and fork in Fig. 1. The part B is fitted in place of the ordinary tool rest, and the jaw, C, which has in it a V-shaped notch, is hinged to the part B at D. A screw, E, passes through the upper end of the part B, and bears against the jaw, C. After what has already been said in connection with the engine rest, the manner of using this contrivance will be readily understood.

In Fig. 3 the hand tool, F, is employed for steadying the shaft and bringing it to a centre. This tool is bent to form a right-angled notch for receiving the shaft, and when in use it is supported by the tool rest after the manner of an ordinary hand turning tool.

Work that is too large to be readily centered in this manner is often centered approximately by means of the universal square, as shown in Fig. 5. A diametrical line is drawn along the tongue of the square, the work is then turned through a quarter of a revolution, and another line is drawn. The intersection of those lines will be the centre, at least approximately. This point may now be marked with a centre punch, and the work may be tested in a lathe. If it is found to revolve truly on the centres it may be drilled, otherwise the centre must be corrected with the centre punch, and the work again tested in the lathe. After centreing by any of these methods, the centre must be drilled and countersunk with a suitable tool, so that it will fit the lathe centre, as shown in Fig. 6. The angle of the lathe centres should be sixty degrees. To insure uniformity in everything pertaining to the centres, the centre gauge, shown in Fig. 7, should be used for getting the required angle on the lathe centres and on the drilled used in centreing.

The matter of steadying long, slender rods while being turned in the lathe is often perplexing. In some cases it may be done tolerably well in the manner illustrated in Fig. 8. The fork, H, is supported by the standard, I, which is inserted in the neck of the rest support, J. The device shown, in Fig. 2, may be used in a similar way. Fig. 9 represents a steady rest, the construction of which will hardly need explanation. For light work it may be made of wood; the upright being secured to the cross piece, L, which rests upon the lathe bed. The slotted pieces, M, are adjustable lengthwise to accommodate the size and position of the shaft. When it is required to support a bar which is not round, the sleeve, N, shown in Fig. 10, is employed. It slips over the shaft and revolves in the steady rest. The bar is centered by the screws, O.

The device shown in Fig. 11 is used where a hollow mandrel lathe is not at hand. A piece of gas-pipe, Q, is held by the chuck, P, and is secured by a set screw in the sleeve, B, which is journaled in the standard, S, and carries the chuck, T. The arrangement may also be employed for turning the ends of long rods where it is not desirable to put them regularly on the centres of the lathe.—Scientific American.