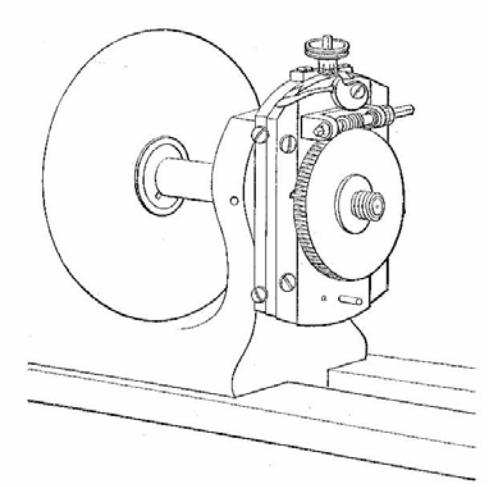
THE ORNAMENTAL CHUCKS

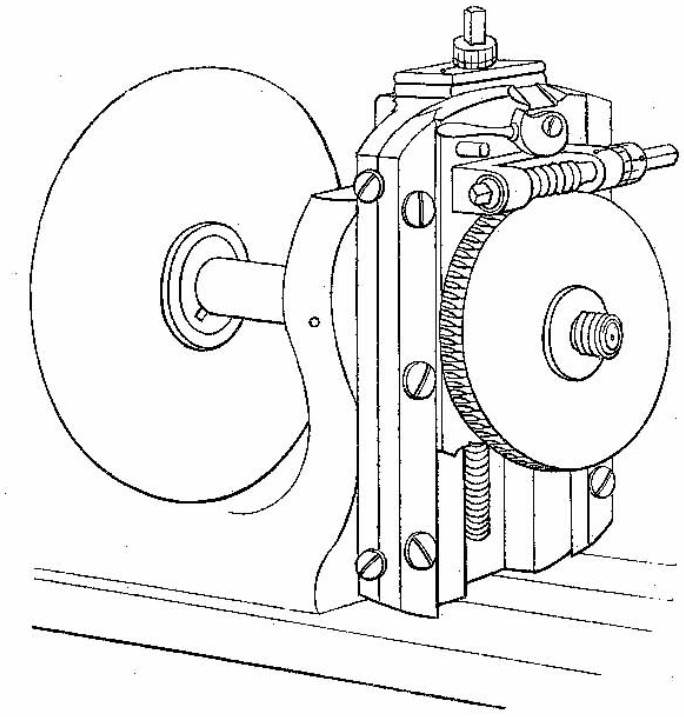
Eccentric Chuck



The Eccentric Chuck is used for multi-centre turning. It comprises a foundation plate which screws onto the spindle nose with parallel slide bars between which runs a sliding plate controlled by a leadscrew. On the sliding plate is mounted a worm-and-wheel of 96 teeth with a copy of the spindle nose in its centre on which the work is mounted. There is a locking pin to lock the slide with the nose at centre. By removing the locking pin and rotating the leadscrew, the slide is extended and the nose becomes eccentric to the axis of the lathe spindle; off-centre turning may then take place. Multi-centre turning is achieved by rotating the worm-wheel to different angles in relation to the orientation of the slide. This chuck may be run at normal speed when in its neutral or centre position but it should only be run quite slowly when eccentric unless suitable counterbalance weights are attached. There is no 'best speed' but all equipment should be free from vibration while running.

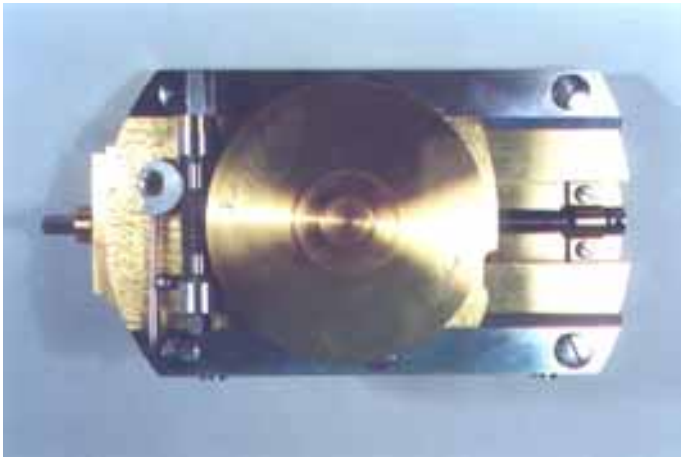
Eccentric Chuck – front view

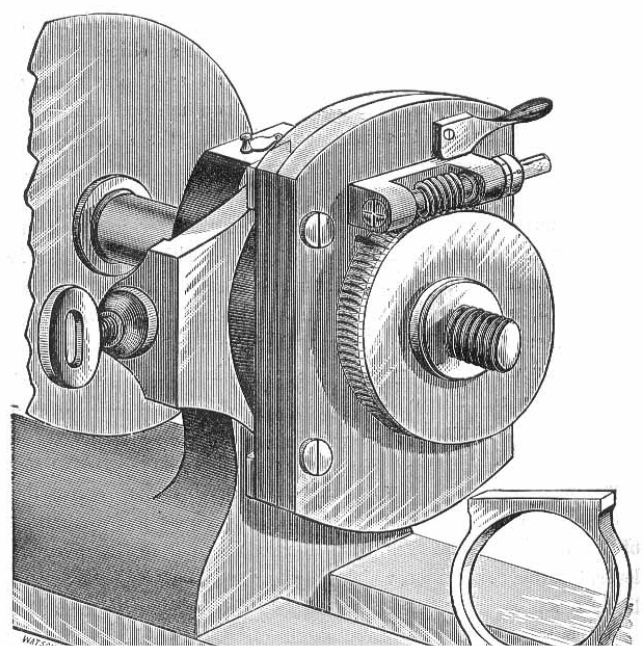
The Rectilinear Chuck is a larger version of the Eccentric Chuck. It has the advantage that the slide may be extended at either end so it may be used like a vertical slide for cutting straight lines or a series of cuts along a straight line. Being considerably heavier than the Eccentric Chuck, it is not intended to be run at speed but it can be rotated by the slow-motion drive. It has a nosewheel of 120 teeth so is capable of some divisions not possible on the 96-tooth wheel of the Eccentric Chuck. It is also useful as a platform for the Oblique Chuck.



Rectilinear Chuck

Rectilinear Chuck – front view





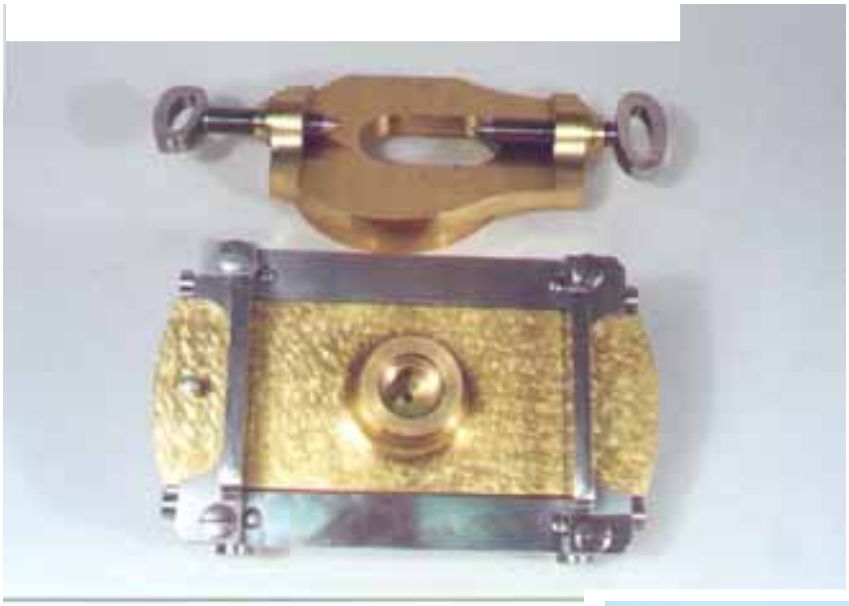
Ellipse Chuck with sliding block

The Ellipse Chuck is constructed in a similar way to the Eccentric Chuck except that the slide bars are fixed to the sliding plate and there is no leadscrew. The foundation plate is screwed to the lathe spindle and rotates while the sliding plate floats. There are two steel pallets mounted squarely across the back of the slide bars at top and bottom and these embrace a cam-ring; the cam-ring plate is clamped horizontally on the centre line across the face of the headstock with two adjusting thumb-screws and, when the cam-ring is positioned centrally, the slide will not float because, as the chuck rotates, the pallets are always an equal distance from centre. However, when the cam-ring plate is moved off-centre (but still horizontal), the pallets, in embracing the ring, pull the sliding plate away from the centre each time it returns to horizontal; i.e. twice in each rotation; and similarly, each time the plate returns to vertical the slide is pulled back to centre. Meanwhile, the cutter, being in a fixed position on the centre line, cuts an elliptical path on the work. Like the Eccentric Chuck, the nosewheel

Ellipse Chuck – front view

may be adjusted so that ellipses or patterns comprising elliptical cuts may be placed at any orientation. For extra stability some chucks have a sliding-block (see engraving), which is a ring with two parallel flats on its outer rim; the ring rotates around the cam-ring and the pallets slide along the flats; thus the bearing surfaces are continuous whereas, without the intervening sliding-block, the direct bearing between the pallets and the cam-ring is only tangential.

Ellipse Chuck & Cam-ring – rear view



This elliptical box was made on the Ellipse Chuck; the lid and base were fixed to wood chucks with a paper and glue join. The insides and edges were turned at the same cam-ring setting so they were exactly parallel and finished to a tight fit; the lid was parted off and taped to the base. Then the lid pattern was cut with the ECF. The side pattern was done progressively from the edge of the lid, cutting through the tape. The fitting of the lid was eased afterwards. Finally the box was parted off at the paper join and the wood chuck turned to fit the inside profile so the bottom could be finished.