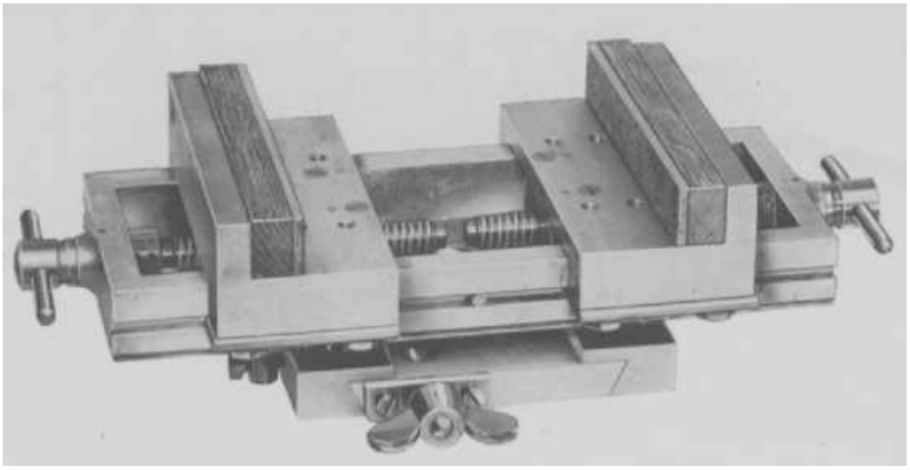
2. Cutting Lines: The basis of all engine turning

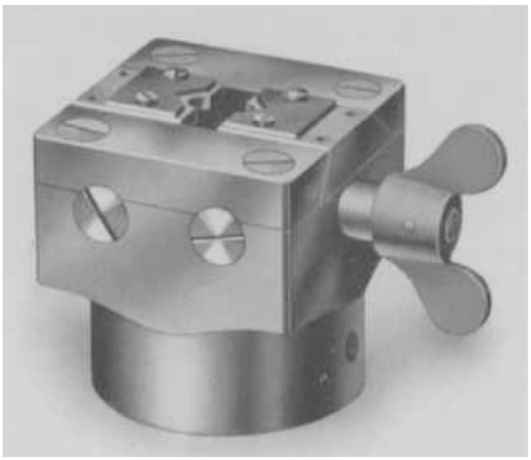
Holding the Workpiece

Before we can begin to cut, we must hold the work safely.

Holding the workpiece correctly is of tremendous importance. It must be held rigidly but without damaging it. The forces involved in engine turning are quite considerable and must be entirely taken account of in selecting the method of securing the workpiece. In this section we will look at some basic methods for holding workpieces on an engine turning machine These can apply to both straight line and rotary work.



Two jaw independent chuck for holding workpieces There are many variations on this theme with various jaw design, some self centring, all used both on straight line and rotary machines

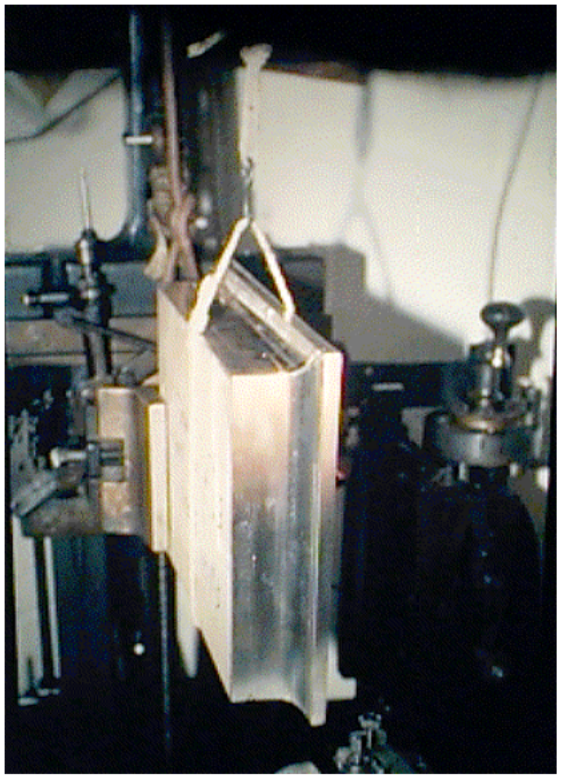


Two jaw self centring chuck for holding cufflinks and other small flat items

Engine Turners Cement or "Wax"

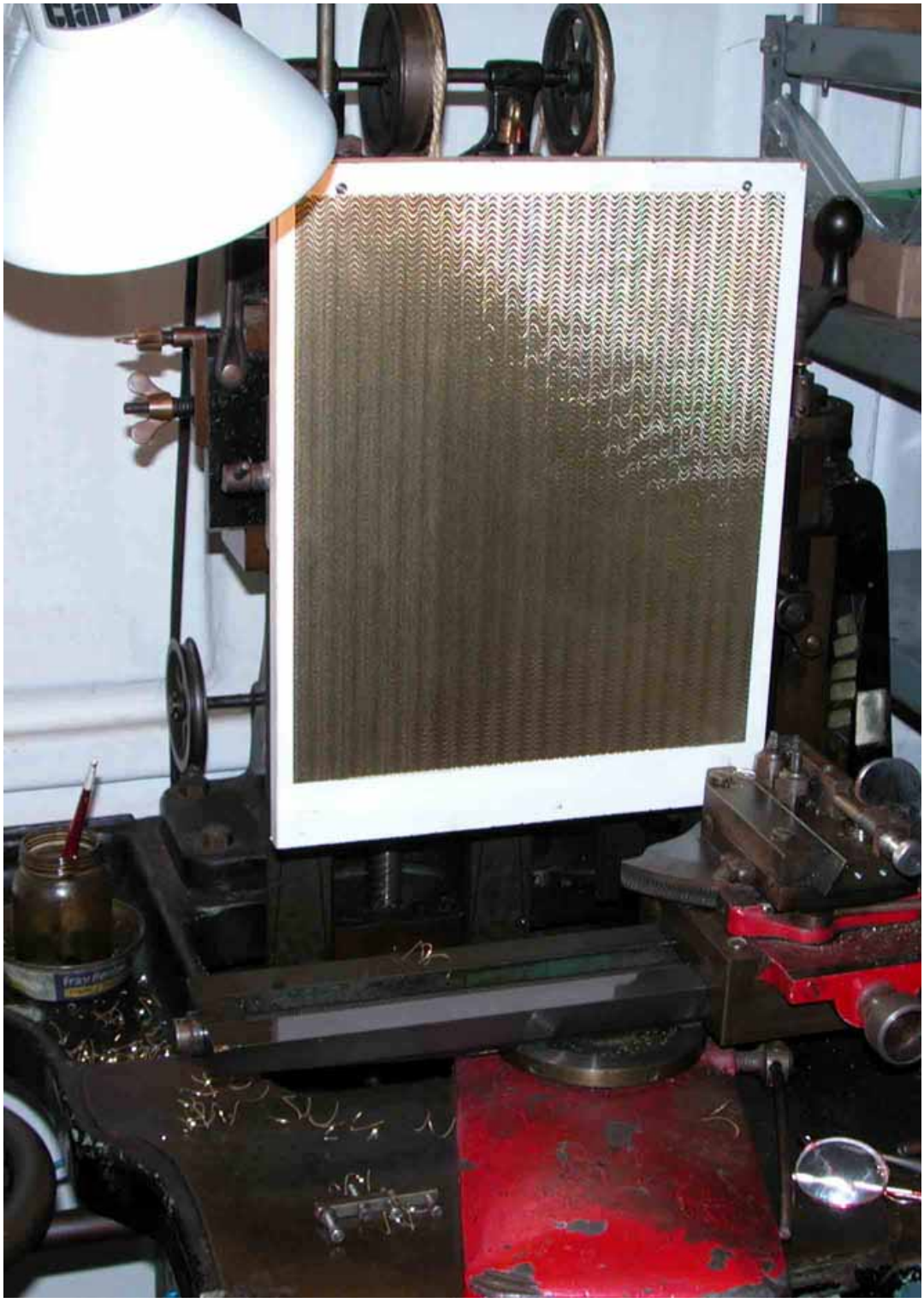
For all the numerous jobs that are too irregular in shape or too delicate to hold in chuck jaws, there is the traditional engine turners cement, traditionally known as wax. This is also used, as illustrated here, for filling items that would otherwise be crushed by the chuck jaws, even when used with leather strips to protect the work piece.

Filling a small antique box with wax for restoration of the engine turning Many objects need filling so that they are not crushed by the chuck jaws Other items are stuck to wooden blocks with wax because their shape is too complex to grip in a chuck



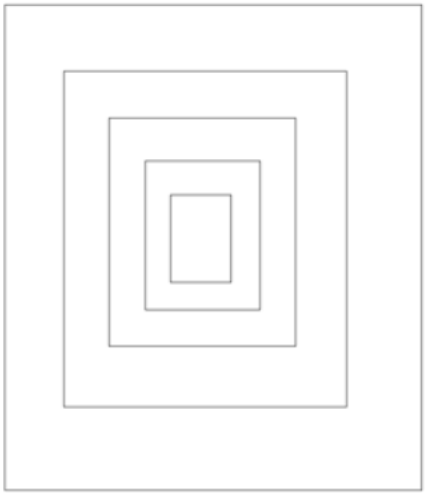
A large spread based box The job is to engine turn the curved sides with barley The box is filled with wax, lightened with wooden blocks to take up as much of the space as possible and also save on wax Even so, the weight is such that extra counter-balancing is required to prevent the cross slide from sticking: a very serious issue, since this would ruin the pattern The cord tied around it is attached to a weight or a balancing apparatus

Quite one must make significant modifications to the machine setup to handle large pieces of work. A number of ingenious methods are used as with the spread based box shown above, where in addition to the counter balancing apparatus wher the bed of the machine has been extendedto accommodate the sliderest further out from the mainslide and upwards from the bed to fit the large workpiece in between, which will not fit down the well.



A sheet of metal approximately 11 by 13 inches (280 by 330mm) engine turned for a series of concentric picture frame blanks to be cut out and enamelled This took about 7 hours to cut, plus the setting up The standard Plant straight line sliderest is not big enough for this job so it was swapped it for one from a rose engine that has a longer cross slide It is clearly shown, painted red, in this image

Making Concentric Picture Frames



TIP *Use one piece of metal to make several picture frames like this This saves on engine turning costs and very significantly on scrapping and reclaiming of precious metal*