

Chapter 25

The 'John Wilding' depthing tool

A depthing tool

The traditional depthing tool is designed to accept completed arbors with their wheels and pinions. The little tool which I show here is designed to depth wheels and pinions before they have been mounted on their arbors. It is therefore not suitable for repair work where the wheels and pinions are integral with the arbor.

A second use for the tool is when laying out escapements. In fact it was for this purpose that I originally designed it, the depthing of wheels and pinions being a secondary consideration.

A distinct advantage of this tool is the closeness of the pointed runners to the meshing position of the wheel and pinion, a distance of less than 1". Whereas in the traditional depthing tool the equivalent distance is often 4" with the possible loss of accuracy over such a long distance.

Fig. 228 is a drawing of the parts. The base plate is a strip of 1" x 1/8" brass strip and naturally a nice straight piece should be selected.

The long slot is not critical and I formed mine by drilling holes at each end and joining them up with the piercing saw then filing to shape.

The fixed and movable bushes

The fixed bush should be machined at one setting and the shoulder well undercut so that the bush seats properly on the underside of the plate. It can be made a press fit or secured with Loctite. Care must also be taken with the machining of the movable bush to make sure that the centre hole and the seating for the wheel are both concentric.

The runners can be made from 3/32" silver steel rod which should have the point taper turned by setting the cross slide over 15 degrees. The actual point is formed by filing a second more obtuse angle either with a pivot file or an Arkansas slip stone. The runner should be hardened and tempered to dark straw. Several runners should be made and the upper ends left soft so that they can be turned down to accommodate pinion heads with small bores as required. One runner should be fitted with a trumpet end for locating in a large existing pivot hole. This can be seen in fig. 229. A close-up of the tip of a runner is shown in fig. 230.

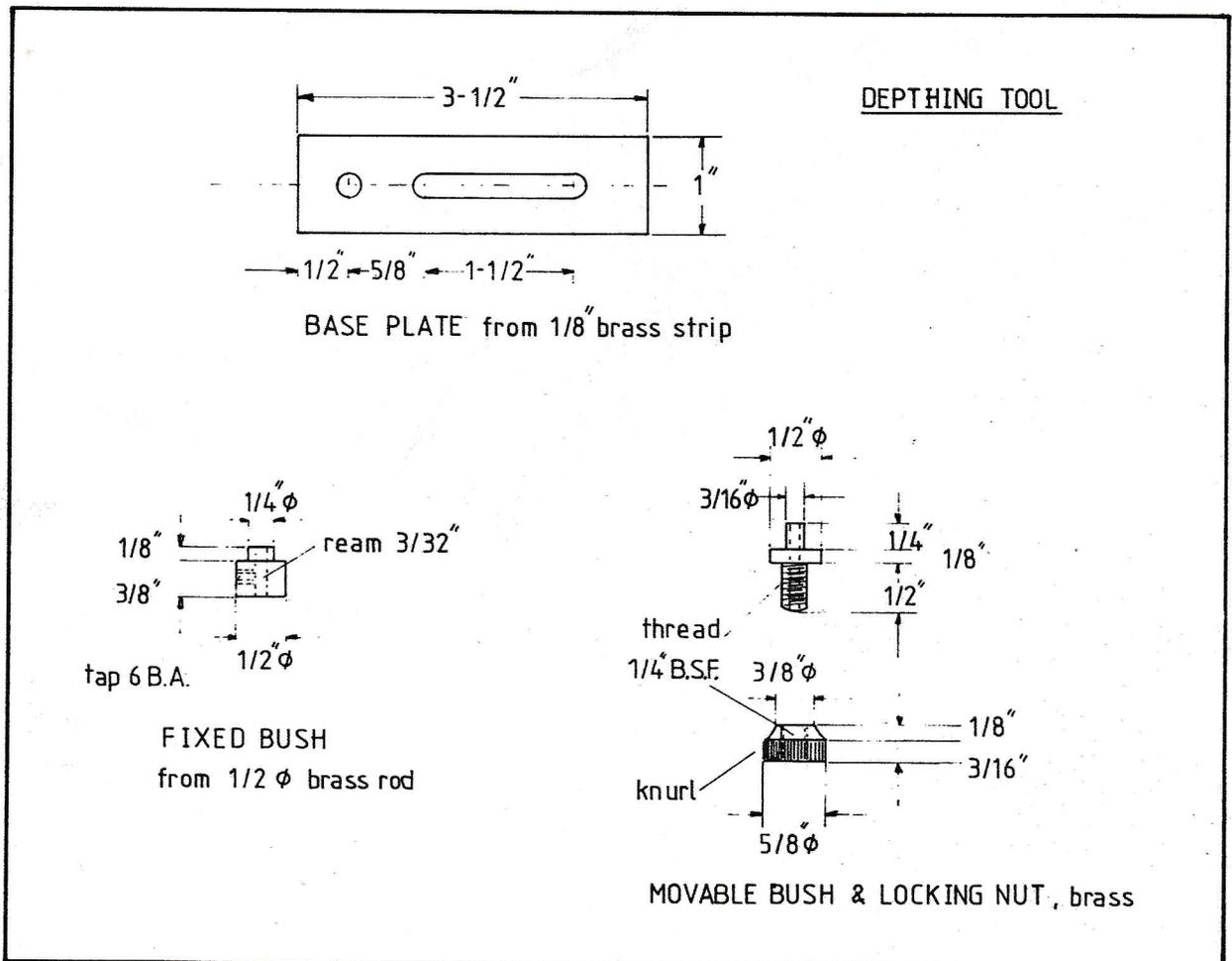


Figure 228

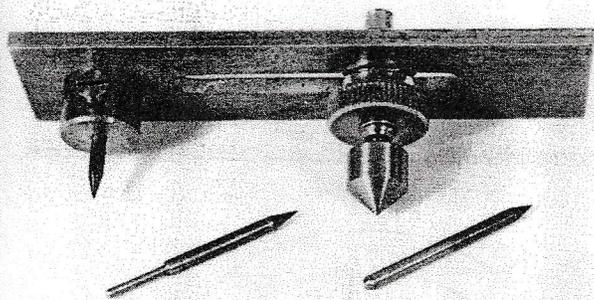


Figure 229: Showing the depth tool. A trumpet runner is fitted in the movable bush.



Figure 230: A close-up of the tip of the runner.

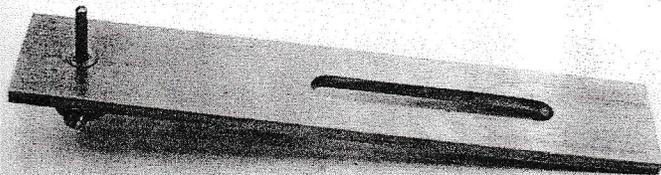


Figure 231: A long bed for use when depthing large wheels.

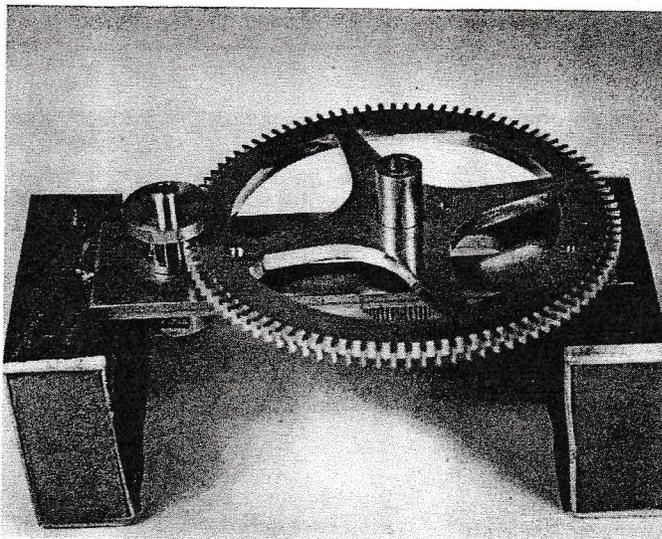


Figure 232: The tool in use depthing a wheel with a lantern pinion.

An example of a wheel and pinion being meshed is given in fig. 232. The depthing is checked both visibly and by sound and feel. In theory the two components should mesh on their pitch circles.

Many constructors may feel frustrated over having to make these special tools, but in the specialised field of horological engineering such items are frequently required and cannot be obtained commercially. This particular tool is a "must" for making escapements and for depthing work.