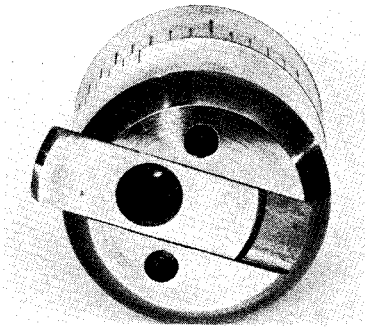


A COMPACT MICROMETER BORING HEAD

by G. A. Harding

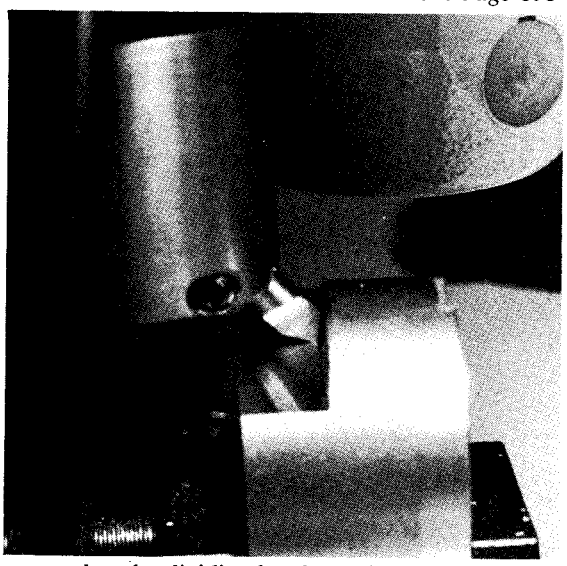
Part II (Conclusion)

From Page 693

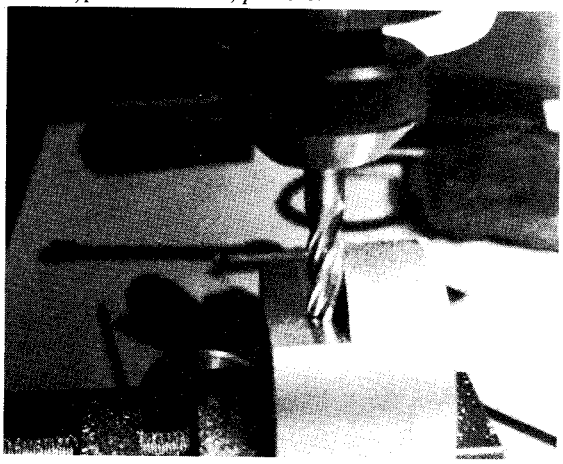
Outer shell *(Drawing No. 3)*

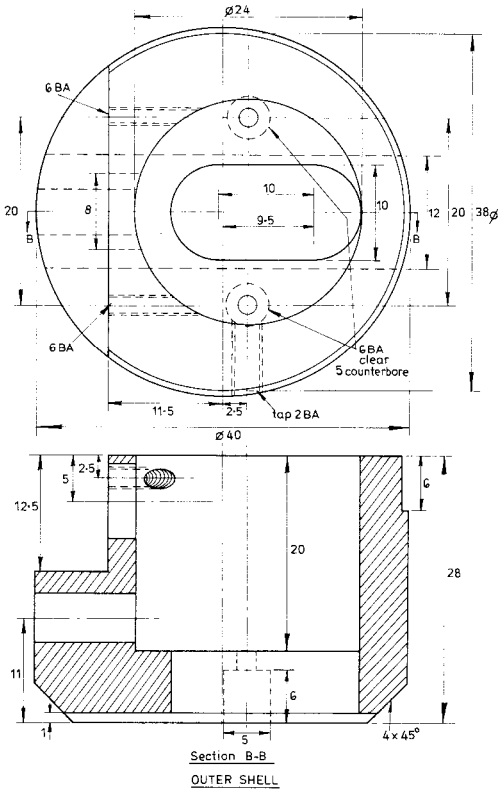
A 46 mm dia. piece of brass 30 mm long is bored 24 × 20 mm deep then clamped on the milling table for drilling the securing holes and milling the 10 mm and 12 mm slots. The fixed jaw may now be removed from the machine vice, to hold the body as in photo 5, to mill the 12.5 mm step, using a large fly cutter to rough out, and (photo 6) finishing with an end mill.

The central core is now to be placed in the machine vice and clocked true. The outer shell can now be placed over the top and the 12 mm slot clocked true and clamped lightly; the securing holes may now be pricked through, the shell then removed and the 6 BA holes drilled and tapped. The core, tool holder and shell can now be assembled and screwed to the dividing head, making sure that both the core and shell are set exactly vertical. The holes for the tool clamp and slide lock may now be drilled, and also the hole for leadscrew may be drilled 5 mm dia. right through the shell and through the tool holder, then open up the shell to 8 mm. Start the tap in the drill chuck to keep it square, everything can now be stripped down, cleared of swarf and finish tapped.

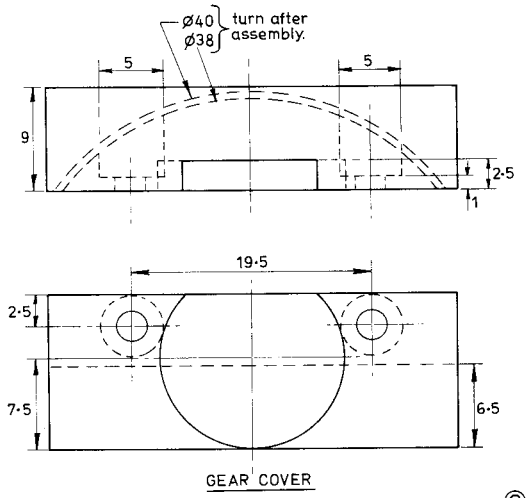


Heading photo, the completed Micrometer Boring Head. Above, photo 5. Below, photo 6.

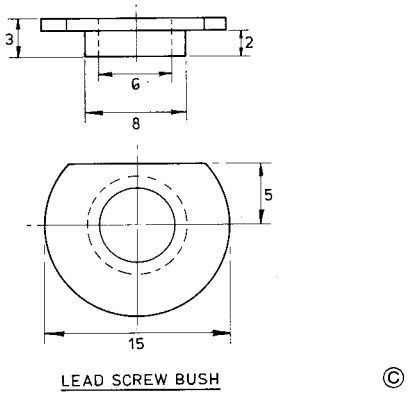




Drawing No. 3



Drawing No. 4



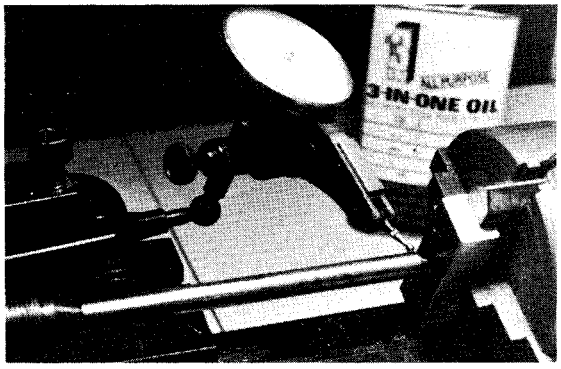
Drawing No. 5

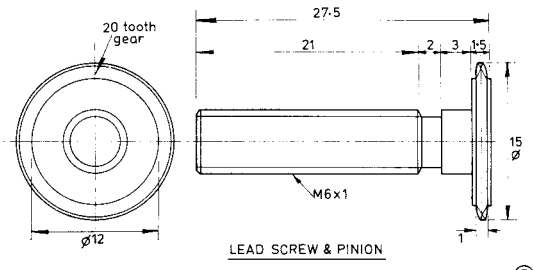
The slide lock screw should only be drilled deep enough to bring up steel swarf, then when stripped down the shell is tapped 2 BA, and the core is drilled and reamed 8 mm after removing the tool holder.

Gear Cover *(Drawing No. 4)*

Face a piece of ½ in. square brass to dimensions shown and mark out the securing holes and the 15 mm dia. bore. I use a 6 mm wobble bar to locate centre pops like this as photo 7. Bore 15 mm dia. by

Below: Photo 7.





Drawing No. 6

12.5 mm deep, drill the 6 BA clear by 5 mm counterbore. The leadscrew bush may now be turned up and pressed into the shell, the gear cover placed over the top and the securing holes pricked through, drilled and tapped.

Leadscrew and Gear Ring *(Drawing Nos. 6 and 7)*

These are both fairly straightforward turning jobs, the only awkward part is actually cutting the gears. Much has recently been written about gear cutting which makes my method look like mechanical butchery, but my motto has always been, "if it works, don't fix it"! So my method is to turn up a cutter as shown and cut the tooth 1.5 mm deep, finishing by hand with a needle file, photo 8 shows the gears being cut.

Finishing of the Body

Everything can now be assembled for final turning, including the gear ring which is used to set the tool holder on centre, where it is locked, and finally bore to size. The exterior can now be turned as the drawing, with the slide cover in place simply pressed over the 10 mm dia. of the tool holder. At this stage the 24 mm dia. can be threaded M24 by 0.5 mm, using a 20 by 20 by 20 mm Dural block behind the tool to get it close enough to the headstock.