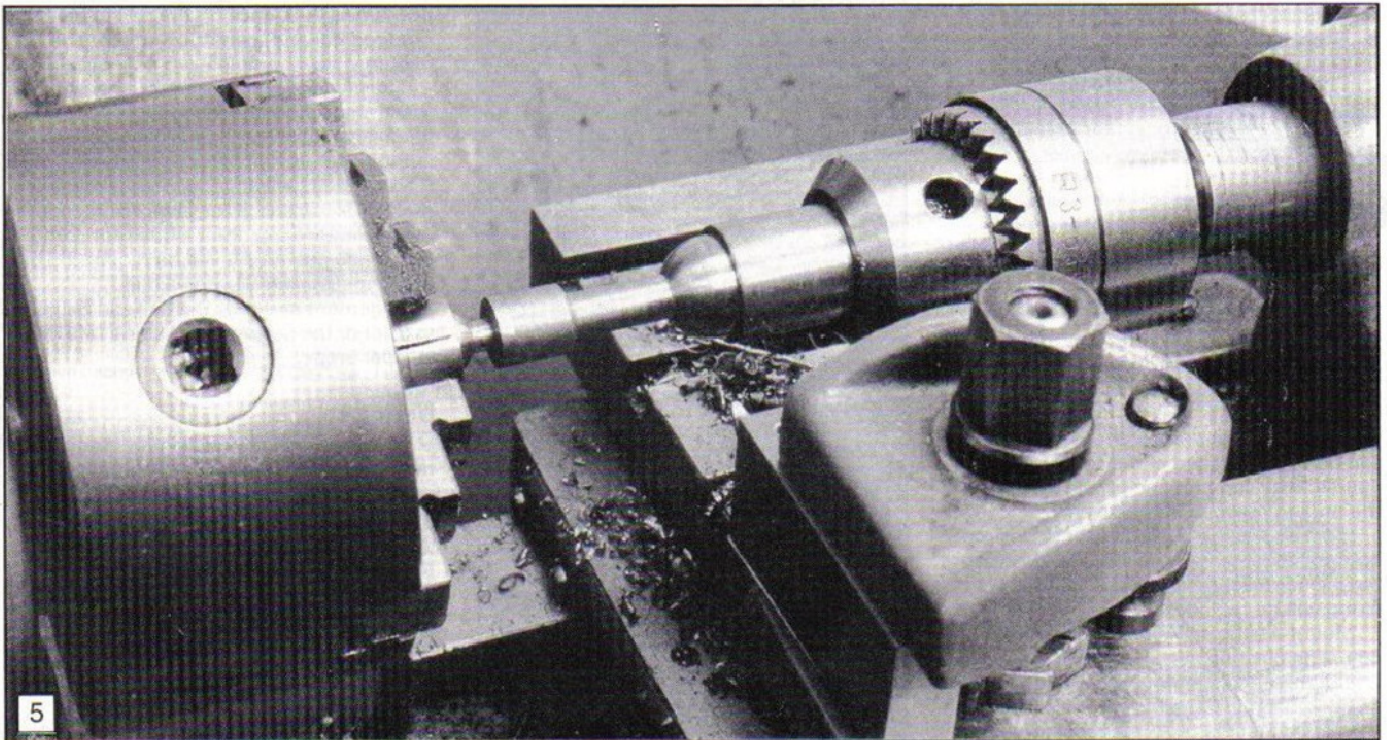


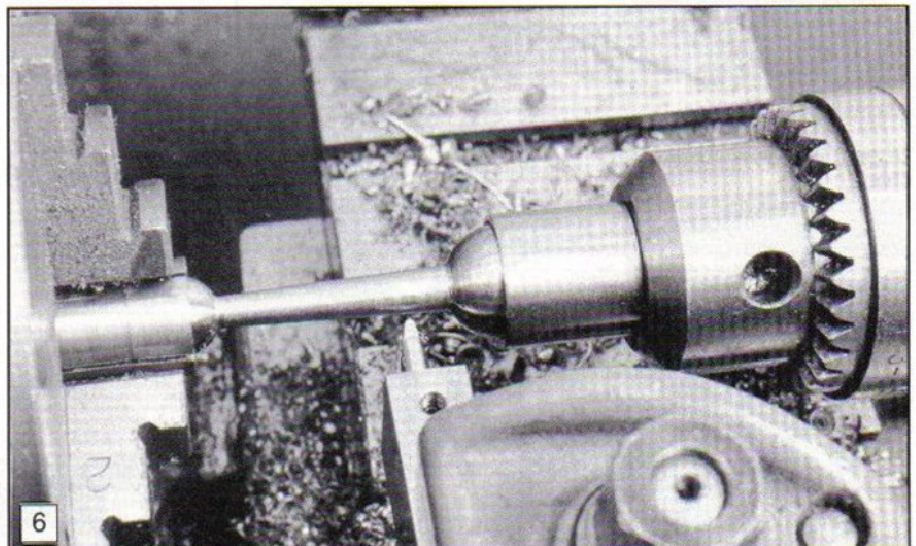
# HANDLES



regularly checked to see that the clearance has not been taken up as a result of expansion of the part due to the heat generated. The shallow taper will also help to avoid problems as a result of expansion. These fixtures can be seen in **photograph 3**.

Fit the split collar in the chuck and the internal centre in the tailstock. Place the handle in the split collar, and tighten the chuck so that the ball is held very lightly. This will permit the outer ball to be moved to line up with the centre. Wind in the centre until it fully engages the ball then fully tighten the chuck. Adjust the tailstock again to ensure clearance between ball and support is present as indicated previously.

If a sharp corner between shaft and ball is preferred, then both left and right hand knife tools will be required. Alternatively, if a small radius is considered acceptable, then a tool with a narrow round nose will permit the shaft to be finished in one pass. The tool used can be seen in **photograph 4**.



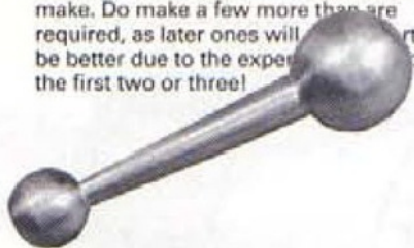
## Taper attachment or top slide?

To achieve the taper on the shaft, using either a taper turning attachment or setting the top slide to the angle required are possibilities. If a taper attachment is available then this is definitely the way to proceed as, due to limited space, setting and operating the top slide can present a problem.

If, as is likely, the top slide has to be used, set this to the required angle. The choice of gripping the small end will become obvious at this point, as with the smaller end of the shank being nearest to the headstock there will be greater clearance between top slide and tailstock. This is shown in **photographs 5 and 6**.

Start by taking light cuts only to create the taper; as the process is continued experience will be gained to determine what depth of cut is permissible without the arrangement objecting in any way. If required, finish off the shaft with the grade of emery cloth to achieve the desired result.

If a Quorn cutter grinder is being made, there will be quite a few ball handles to make. Do make a few more than are required, as later ones will certainly be better due to the experience gained on the first two or three!



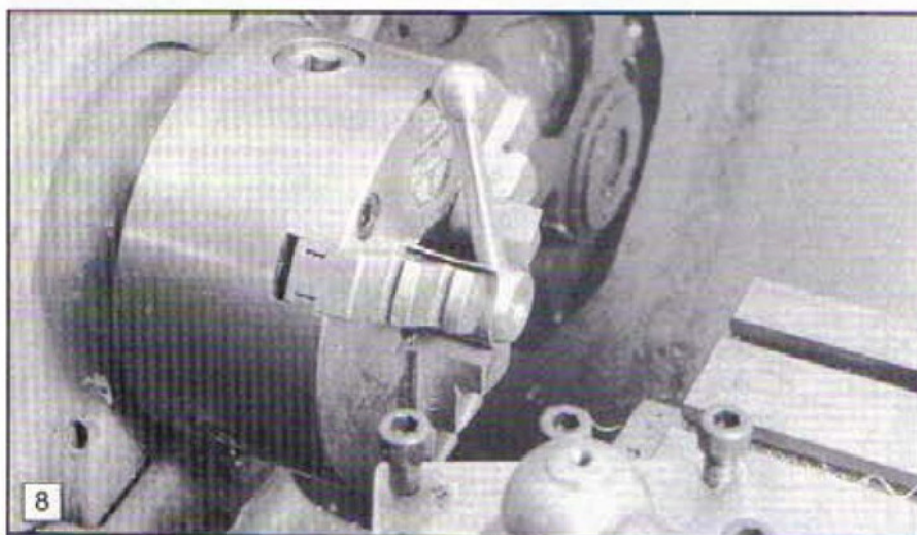
7

## Making the flat

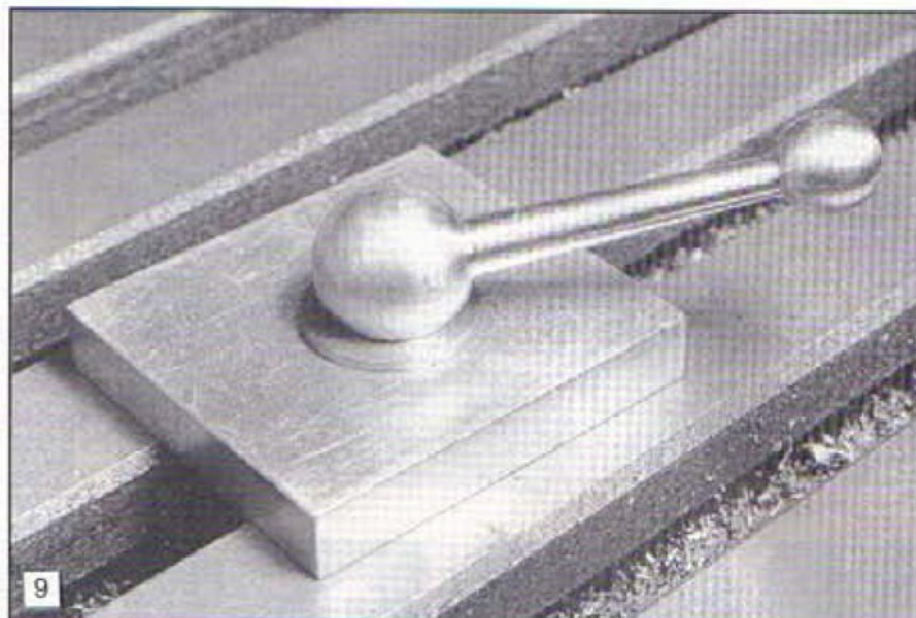
When the handle is complete to the stage seen in **photograph 7** it remains to make a flat on the larger ball and produce an internal thread. Making the flat and also the thread is best done in the lathe as both can be accomplished at the same time. Of course, they can be done on the mill and the drilling machine if preferred.

If the size of the three jaw chuck is large enough, in particular the amount by which the jaws project from its face, no other fixing will be required.

Mount a lathe spindle back stop and adjust its position such that, with the large end of the handle resting against it and the small end against the face of the chuck, the correct angle results. Protect the large ball

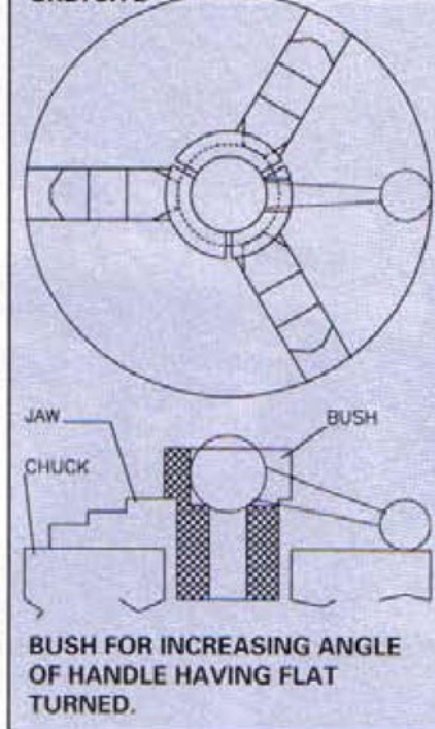


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9

SKETCH 2



from the chuck jaws, using strip of copper or similar. This arrangement is shown in **photograph 8**. Face off the ball to give the required flat and then drill and tap. The handle is now complete.

The jaw projection is important as it determines the maximum angle that the handle can take up. That achieved with the author's set-up can be seen in **photograph 9** and would probably be too shallow for most applications. If the jaws are insufficiently deep, then a bush similar to that made previously will be required. The drawing (**Sketch 3**) shows this arrangement and how the ball can be held in front of the jaw ends, resulting in a steeper angle.

## Material

Turning a ball handle is quite a complex task and, because of this, will benefit from anything which will make this task easier. Most essential is the choice of material; do use free cutting bright mild steel as less machinable material will greatly add to the problems of obtaining a good result. This lesson was learned whilst making that shown in this article – and the effect can be seen ...

## Ball handles?

Having explained one method for producing ball handles, I do hope this explanation prove of benefit, even to those who will never see the need to produce such an item. It is also worth considering, particularly if you only need one or two handles, whether this is the type of handle to use. Look at the handle on page 72 of the Dec 91/Jan 92 issue and compare it with that on page 36 of the same issue. Have readers any thoughts on the subject?

## Quick Tip

Heating a Loctited screw or nut with a blowtorch past the operating range of the adhesive will kill the adhesive enabling it to be withdrawn easily but be careful since this method is not always desirable on some jobs.

Mr Langham