Continued from October 15

SIMPLE ACCESSORIES

by John K. Mold

WE do not all get the opportunity to examine a really high-class precision lathe and a close inspection of pictures in the catalogues often leaves one mystified as to how the top-slide is clamped down to the cross-slide.

In our machine this is done as follows. There is a 2 BA clearance hole in the base (21), 5/16 in. from one end. The base swivels on the 2 BA cap-screw which passes through this hole and is also locked when the screw is tightened. Access to the screw is gained by two No. 3 holes drilled in part No. 22. These are so positioned that they are vertically above the cap-screw when the slide is moved along.

Thus, to make an angular setting of the topslide, one first removes the tool post, turns the handle until either of the holes is over the cap-screw, when an Allen key can be inserted. For much of the work that is done, this is all that is necessary to lock the topslide. For added security, however, a second bolt passes through the curved slot, as shown in the drawing of the base (21). I do not think there is much more to say about the topslide, except perhaps, that the sliding surfaces are not arranged exactly as those of the cross-slide. If you compare Fig. 6(a) with Fig. 5 you will see what I mean. Fig. 6(b) also shows a dodge I had to resort to in order to hold the work down to the shaper table.

Accessories are endless in their variety and they vary in complexity from a simple T-rest for hand turning to a complete dividing head mounted on a vertical slide.

The lathe is intended to be developed in this way. Thus, there is an extension to the end of the spindle to take a division plate. The T-slot in the topslide provides a secure fixing for a fly cutter frame for milling small gearwheels and the like. There is enough metal around the tailstock to take a lever feed attachment for drilling. Accessories, however, depend very much on the individual and the kind of work he does. I will mention a few simple devices that are invaluable if your main interest is model making.

For dividing, 12 holes can be drilled in the left-hand face of the pulley. They should be quite small-a No. 50 drill would do very well. Make up a spring detent like that shown in August issue. Mine was made from part of an old steel rule. You are now able to lock the spindle and can divide work into 2, ***3, 4, 6*** and 12. Thus, squares.

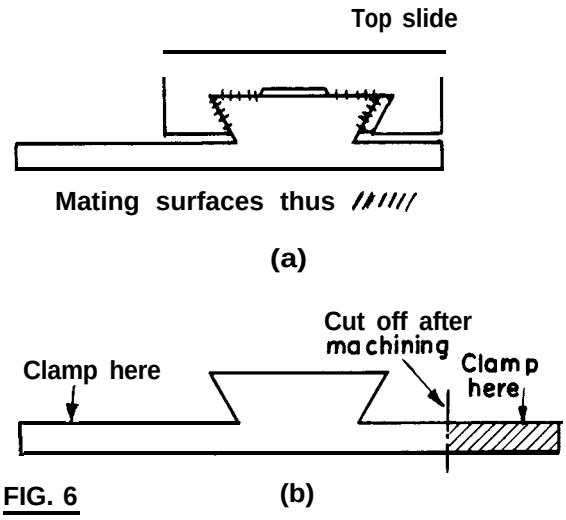
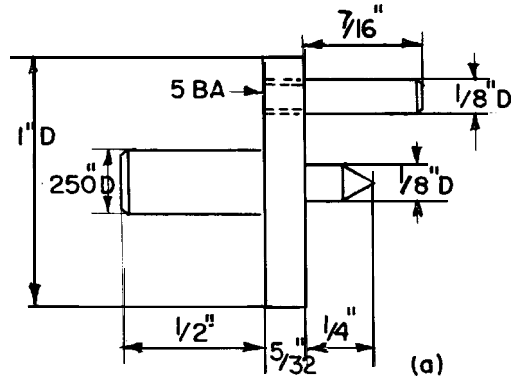
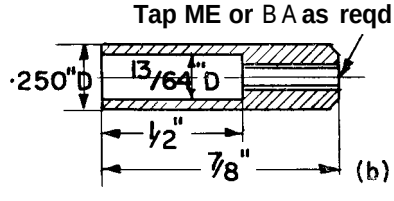


FIG. 6



COMBINED CATCH PLATE AND CENTRE



TAPPED BUSH

FIG 7

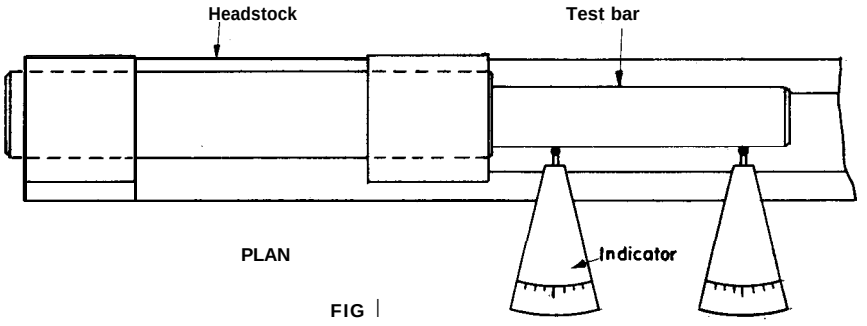


FIG |

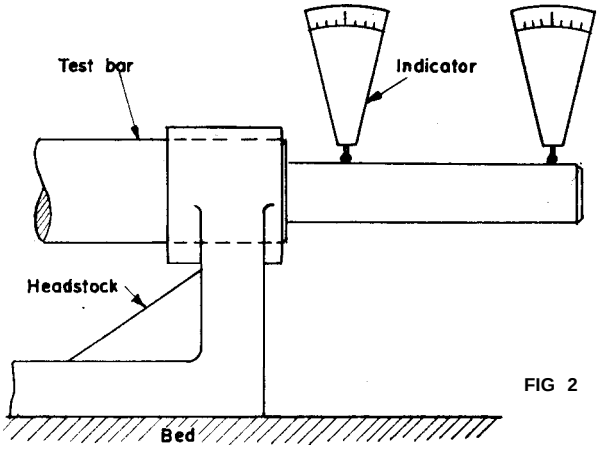


FIG 2

and hexagons can be filed on work held in a collet. I have filed squares on the ends of small steam valve spindles in this way and also made the square drifts for cutting the holes in the wheels. The work is done rapidly and if you make up a roller rest for the file, highly accurate work is produced.

Fig. 7(a) shows details of a miniature driving plate which can be held in a collet and when this is made you can turn between centres.

For carrying out second operations on threaded work, tapped bushes are useful. They can be made 1/4 in. dia to be held in the large collet. Make one each for the BA and ME thread sizes you commonly use.

Small mandrels serve to hold discs and similar things and these can be made up as the need arises.

I hope these notes will prove useful to readers who are interested in this kind of work. I know that the design will not be approved by all. The bed, for example, would be better if it were a rigid iron casting, and the spindle would be improved by having journals and collet nose hardened. But these features would introduce difficulties of construction, which could only be overcome by the use of expensive and specialised machine tools. Of necessity, I have kept the design as simple as possible and prolonged use of the lathe has proved it to be satisfactory.

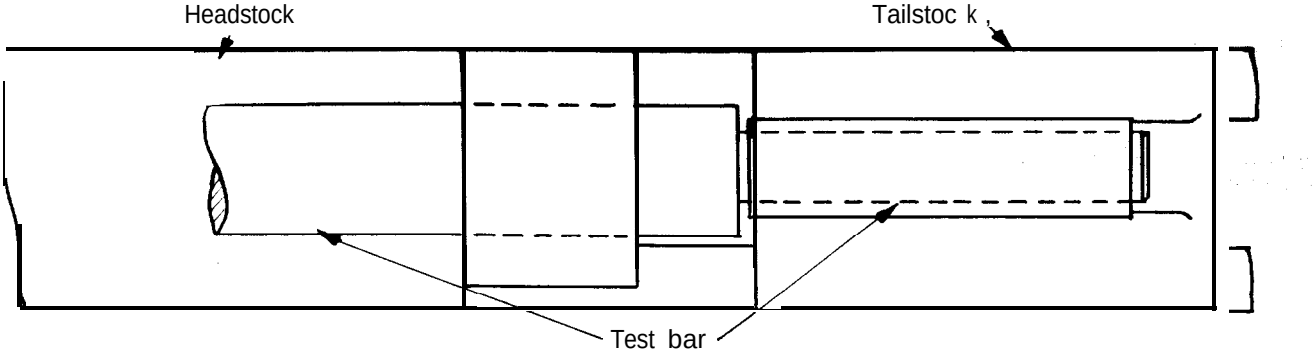


FIG. 3

MARINE ENGINE *Continued from page 787*

and the crossheads were located and bored on the angle plate attached to the faceplate.

The eccentric sleeves were bored in the chuck, leaving a lapping allowance, and they were pressed on by a special arbor for fitting to the faceplate so that they were set for turning the ecentric diameters, and then the bores were finally lapped to a push-fit on the crankshaft.

The stop valve is of phosphor bronze and stainless steel, and it was made from the solid. The flywheel was a plain turning job, but the bore was lapped to a tight fit on the crankshaft.

The engine is mounted on an aluminium alloy bedplate milled out to give clearance for the big ends and eccentrics.

The remainder of the operations involved a considerable amount of careful handwork involving many hours.

The engine has not yet had a steam test, but it behaves perfectly when run under air pressure. The screw reversing gear is the main addition to the design, but I think it improves the appearance and gives the engine more of a marine character.

For anyone interested in photography I would like to add that the illustrations were taken with a 35 mm. camera with a close-up lens, the aperture being fi6 and the exposure half-a-second. The model was set up on the table and the source of illumination was the light coming through the window.