

Novices' Corner

A Centre-punch Grinding Rest

IN last week's article an extemporised rest for grinding centre-punches was described, but if this is made in rather more elaborate form it will be found a useful article of workshop equipment, and, at the same, time its construction will provide some interesting workshop practice.

The dimensions given, may, of course, have to be varied to suit a particular grinding machine.

The general arrangement drawing, or in this case the photograph in Fig. 1, is intended to show the worker what he has to make, and the working drawings in Fig. 2 give the dimensions of all the parts. The V-rest, part (1), is made from a length of 1/2 in. x 1/8 in. mild-steel strip, and before being cut to length, the position of the screw holes should be marked-out as already described and then drilled 1/8 in., but if it is found that these drill holes do not allow the 1/8 in.

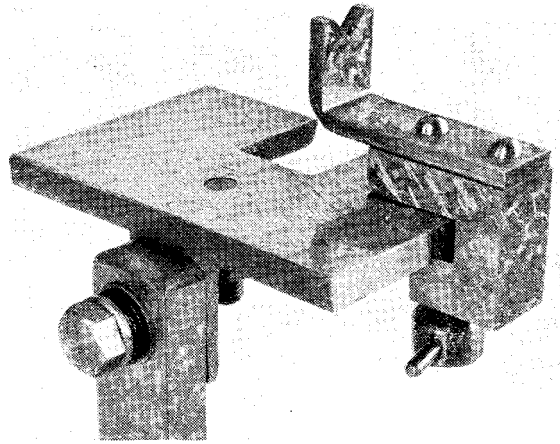


Fig. 1. Showing the V-rest attached to the grinding table

Finally, the surfaces of the part should be given a good finish by careful filing with a fine file.

The clamp, part (2): is made from a piece of mild-steel 1 in. wide and 1/2 in. thick. The work is painted with marking fluid, and its contour is marked-out with the jenny calipers, but for this operation it is essential that the end of material should have been made square with its parallel sides by filing and checking with the try-square. An alternative method is to use one side for guiding the jenny calipers and to

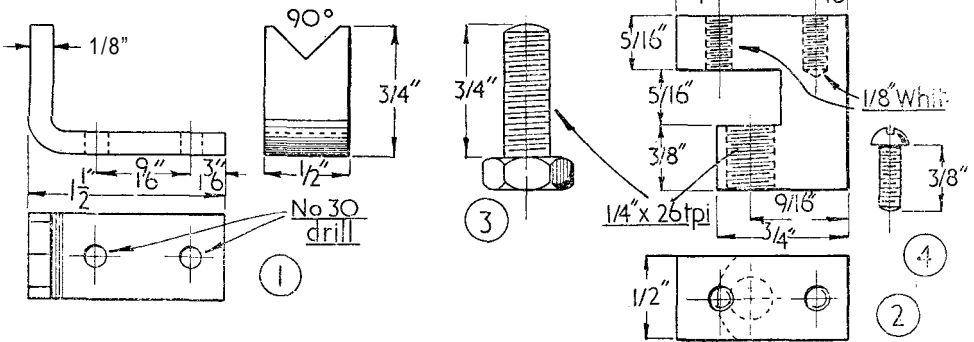


Fig. 2. Working drawings of the grinding rest

Whitworth screws to pass freely, then they should either be enlarged with a taper broach or a No. 30 drill should be put through. Next, cut off the part to length and clamp it in the vice with 13/16 in. projecting, then hammer over this portion to form a right angle bend.

The right-angled V can be cut roughly to shape with a small hacksaw and then finished with a triangular file. The inner surfaces of the limbs of the V should be bevelled to allow the punch, when in place, to turn freely.

apply the square to this side for marking-out the lines lying at right-angles.

The work is now cut roughly to shape with the hacksaw, and then finished to the given dimensions by filing.

If any difficulty is experienced in filing the sides of the part flat and to a good finish, it is best to rub the work to and fro on a large file to ensure accuracy. The next step is to drill and tap the blind hole, only, to receive one of the in. diameter screws securing the V-rest in

position. To ensure easy tapping this hole should be drilled with a No. 39 drill and to a depth of 1/2 in. to afford ample end-clearance for the tap.

When using the tap, care must be taken to keep it at right-angles to the work surface by checking its position from time to time with the

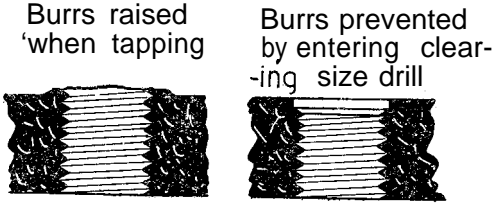


Fig. 3

square. The taper tap is first entered and is followed by the plug tap to form a full thread in the hole to a depth of 5/16 in.

The V-rest can now be attached to the clamp with the single screw, and the work is clamped in the machine vice with the jaws gripping both the V-rest and the clamp. Should the vice jaws 'not be sufficiently deep to do this, then a piece of material 1 in. wide by some 1/4 in. thick should be placed in the vice on either side of the work to ensure that the V-rest is retained correctly in place on the clamp. A drill fitting the remaining hole in the V-rest is now entered for about 1/32 in. to mark the drilling centre and form a guide for the tapping size drill which follows. This drill is put right through the upper limb of the clamp and the hole is tapped as before. This method of working ensures that the two screws will enter their holes without binding.

When it was stated above that the clearing size drill should be entered in the clamp for a distance of about 1/32 in., it should in fact be made to enter for its full diameter to a depth equal to about 1-1/2 threads; this is to prevent the metal surrounding the hole from being raised in a burr when the tap is put in. This operation which is illustrated diagrammatically in Fig. 3 should always be carried out whenever a hole is drilled for tapping, and before the tap is entered.

It will be noticed that in the drawing in Fig. 2, showing the upper surface of the clamp, a curved broken line appears; this is the conventional way of indicating that a part lying underneath, namely the limb of the clamp, is formed with a

curved surface. In this instance, the limb is finished to this form to give a more slightly appearance.

The under surface of the lower limb is now marked out with the jenny calipers to indicate the position of the clamp screw (3); and as previously described the tapping size hole is drilled with a No. 3 drill while the part is held in the machine vice.

For the clamp screw, a standard 1/4 in. B.S.F. bolt 3/4 in. in length may be used, or, if preferred, this part can be made specially for the purpose and will then, perhaps, as shown in Fig. 4, have a rather more workmanlike appearance. A length of 3/8 in. diameter round mild-steel is secured in the machine vice and then cross-drilled with a No. 22 drill at a distance of 31/32 in. from the end. The methods employed for cross drilling shafts have been described so recently in THE MODEL ENGINEER that they need not be referred to here.

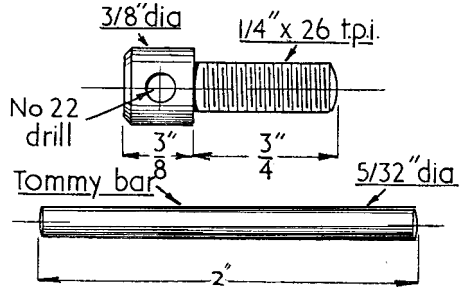


Fig. 4. Alternative form of clamp-screw for the rest

The rod is next gripped in the self-centring chuck, and after the end has been faced, it is turned down to 1/4 in. diameter for a length of 3/4 in.; the tip is then chamfered by taking a light cut with a V-pointed tool. Next, the turned portion is threaded 1/4 in. x 26 t.p.i., by using the tailstock die-holder, or this operation can be carried out with an ordinary die-stock with the part held in the vice. The screw is then parted off, and after it has been reversed in the chuck, the head is turned, faced and chamfered as shown in Fig. 4. The tommy bar is made from a length of 5/32 in. diameter silver-steel, and its ends are chamfered in the lathe, but if preferred, a short cross-handle, like that seen in the photograph, can permanently be fixed in place.

This completes the work and the appliance can now be assembled ready for use.

Locomotive Castings and Parts

A. J. REEVES & CO. have favoured us with a copy of their 1950 catalogue which we can commend to the attention of our readers especially the locomotive-building fraternity. Its 24 pages are crowded with particulars and prices for castings, parts and materials for practically all "L.B.S.C.'s" well-known locomotives, as well as for the 0-6-0 tank engines "Gert," "Daisy" and "Vera" specially designed by Mr. A. R. Donaldson.

Other useful items include castings for bogies for making up passenger cars for 3-1/2 in. and 5-in. gauges; simple stationary steam engines; boiler fittings of all kinds; injectors; pumps; solders; lubricators; a very comprehensive range of materials; small tools, a few other workshop necessities and a wide selection of publications. The catalogue costs and should be interesting and useful to all owners of home workshops, not only to locomotive enthusiasts.