

May to December each contain five such extra pages. Remember to include all these. Generally it is preferable for us to have the complete magazines to avoid risk of error, but the removal of the outside orange cover if desired will not cause any complications.

6. We have only one standard of binding i.e., the 262 numbered pages which comprise the volume. We regret that we are unable to include advertising pages, covers or any other extraneous matter.

7. Volumes previous to Volume 20 can be bound at the same price. The appropriate index should be included in all cases.

8. Before requesting us to supply missing issues to complete any volumes sent for binding, please check the list of back numbers to make sure that these issues are available. We have only those numbers in stock which we detail in the advertisement.

**Our Cover Picture.**

The Manchester Model Railway Society's Gauge O track will be an important feature of the Exhibition which the Society is staging from 18th to 20th December. Although in fine scale the track is laid to standards

which allow a large range of wheel and flange dimensions to operate satisfactorily.

Our photograph shows the Secretary "Bill" Tate driving home the last main line chair pin under the rather critical eye of Barry Paterson.

A description of this very interesting Gauge O layout is scheduled for publication.

**"The Link."**

The Manchester Model Railway Society's journal 'The Link' has always been one of our favourite Club publications, and it was particularly pleasing to note that the current issue bears the number 200. As might be expected it is something of a "Special" celebration number, and the atmosphere is well set by the brightly printed cover bearing a photograph of the Southern Railway Adams class 02 locomotive No. 200.

The 24 page issue contains some interesting extracts from earlier copies of the Magazine which was launched in 1934, as well as the usual items we have come to associate with this well edited publication.

We wish the Society every luck in the attainment of their third centenary.



"That's what I like to see—organisation!"

**A Gauge O Steam Loco for Beginners.**

By "1121."

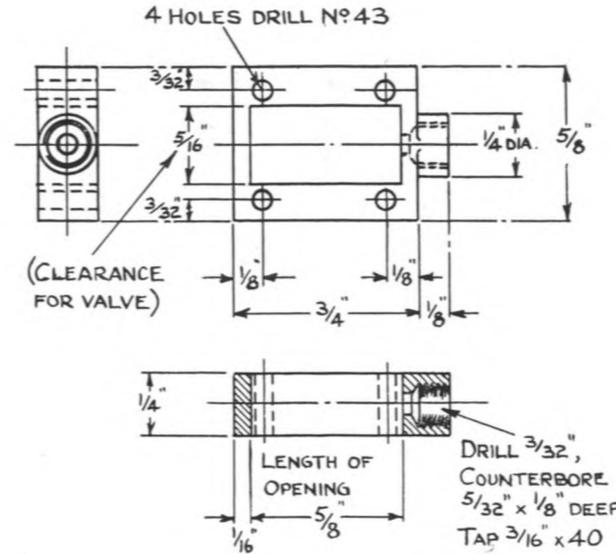


Fig. 66. The steam-chest.

**Steam-chest.**

This, shown in Fig. 66, is made from a piece of brass bar, 3/4 in. x 5/8 in. by 1/8 in. long. There are two alternative ways of forming the large rectangular opening in the middle—either by drilling two 9/32 in. holes and then filing them out to the finished shape, (this drilling would be best done before cutting the piece off the end of your bar, to give you something by which to hold on to it) or else by drilling a string of little holes, say 1/8 in. and then breaking the middle bit out and cleaning up by filing. Both methods are shown in the sketch Fig. 67. Next hold the piece in the four-jaw chuck, with pieces of packing as shown in the "Sequence of operations" diagrams Fig. 68, and turn the boss, face the end, centre,

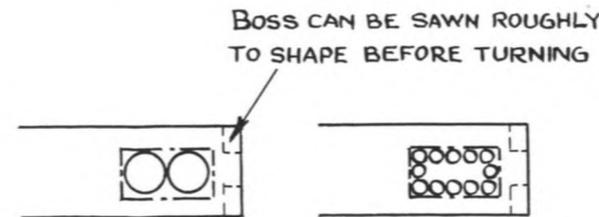


Fig. 67. Alternative methods of forming the opening in the steam-chest.

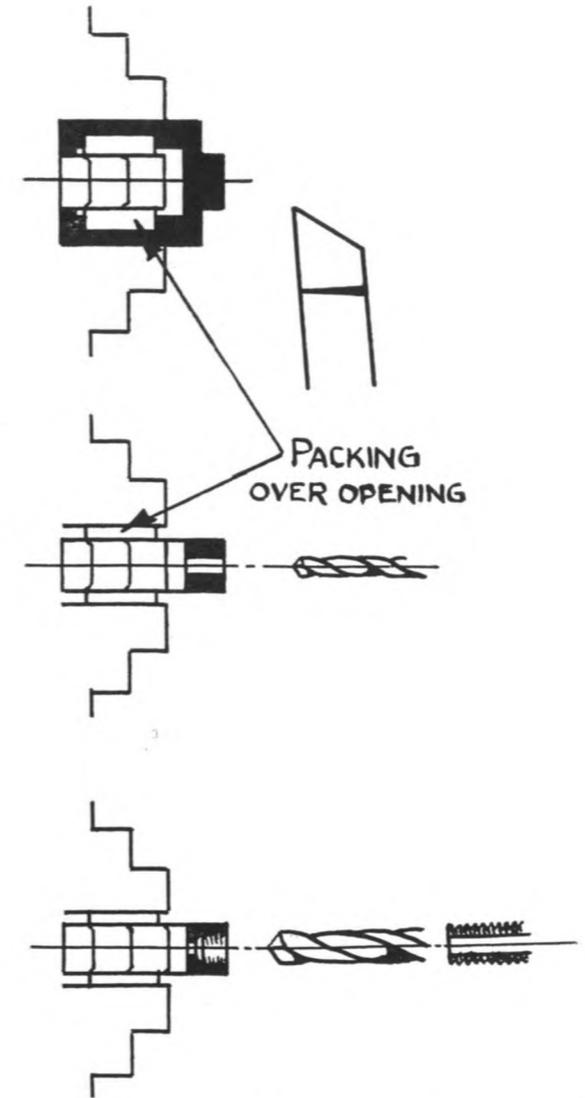


Fig. 68. Sequence of operations for machining end of steam-chest. (actual size.)

1. Hold in 4-jaw chuck, with packing as shown. Turn boss.
2. Centre, drill 3/32 in.
3. Counterbore 5/32 in. 1/8 in. deep tap 3/16 in. x 40 threads per inch.

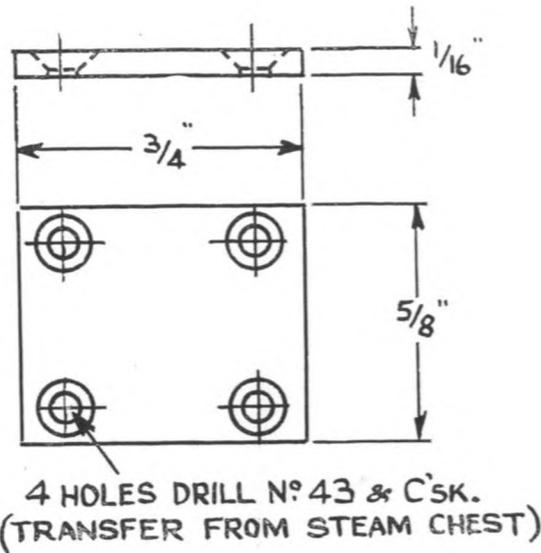


Fig. 69. The Steam-chest Cover.  
(Twice full size.)

drill 3/32 in. open out to 5/32 in. and tap 3/16 in. x 40 T.P.I. Clean up all over, and particularly make sure that the two sides are flat. This is most essential, in order to ensure getting a good contact between the steam chest and the cover on one side and the cylinder block on the other, as although we shall be having paper joints between them, these will simply blow out if they are not held firmly all round. About the only way for the amateur with limited equipment to get these three surfaces right is to hold them down firmly and rub them up and down a large smooth file, being careful not to allow the piece to tip and round off its corners.

Mark out the positions of the screw-holes, and drill them first No. 51. Clamp the steam-chest to the cylinder-block, and transfer these holes through, making sure you don't go too deep and find yourself breaking into the bore! At this stage make a mark of some kind on one or other face of the steam-chest, so that you will know later on which face goes against the cylinder block. Cut the steam-chest cover from 1/16 in. brass plate (Fig. 69) Deal with one side as before to make sure it fits flat against the steam-chest, and then clamp the two together and transfer the holes through from the steam-chest. Now open out the holes in these two parts with the No. 43 drill, countersink the outer side until the heads of your 8 BA. screws go right down flush, and tap the holes in the cylinder block. Make sure the screw-heads will go right down, if necessary slightly countersinking the tapped holes in the cylinder block to clear them.

**Valve.**

All remarks made about accuracy of dimensions when the cutting of the ports was described apply equally to the valve. It's not much good having the ports right

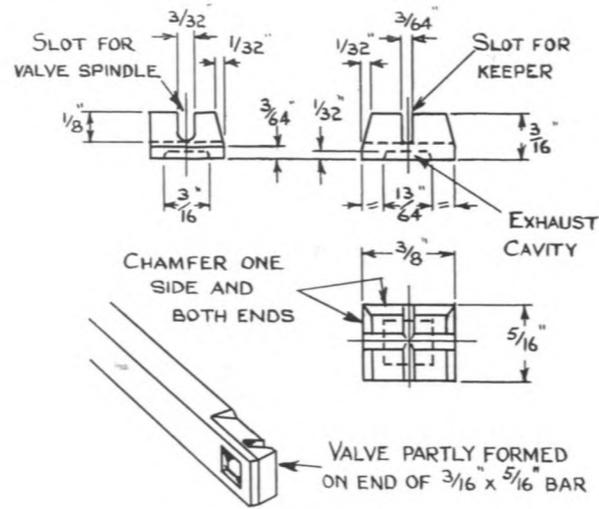


Fig. 70 The Slide-valve.

if the length of the valve or its cavity are wrong. The valve also is peculiarly prone to leaping out of your fingers and disappearing under the bench, by the time you have pruned most of the corners off it and you have nothing to hold, so keep your eye on it! It is made from the same 3/16 in. x 5/16 in. bronze bar as was used for the crosshead, and again it is most convenient to do as much work on it as possible before cutting it off the bar. Mark out the size and position of its cavity, leaving a little more space than you actually need between the end of the cavity and the end of the bar. It is easiest to trim it off to exact length later. Now get busy with your chisel, and dig four little grooves along the four sides of the cavity, afterwards chipping away the middle piece. The depth of the cavity is not terribly important, so long as it is enough to provide a clear get-away for the exhaust steam. Likewise the width of the cavity across the valve is not vital, provided it more or less matches up with the 3/16 in. width of the ports. The length, however, is important, as on this depends the correct timing of the exhaust, the extra 1/64 in. providing an early exhaust and preventing back-pressure on the piston. Make sure the ends of the cavity are truly square across it—they can be trimmed up with a small flat file after chiselling.

Turn the bar over in the vice, put the saw-cut across the centre and file off one corner. This will be the top edge of the valve as it sits in the steam-chest, and the chamfer is there to ensure a clear way through for the steam entering the steam-chest. File the chamfer on the end of the bar, and then cut the piece off a little over-length. File the chamfer on the other end of the valve, and then hold the piece long-ways in the vice and set about producing the longitudinal slot where the valve-spindle lays in. Our method of doing a wide slot like this is to use two hacksaw-blades together in the hacksaw frame, finishing the slot to shape afterwards with small files. The slot must be deep enough to clear the

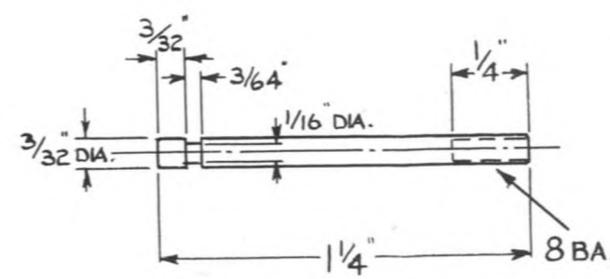


Fig. 71. The Valve Spindle.

valve-spindle, but not deep enough to break through into the exhaust cavity! The slot can best be checked by inserting the valve in position in the steam chest, on a flat surface, and pushing the valve spindle through the hole in the steam chest (with the gland-screw in place to keep it square), making sure that it will pass through the slot in the valve and allow the latter a small amount of "lift." The dimensions of the valve are shown in Fig. 70, and the final operation is to trim it to finished length, being particularly careful to leave the cavity an equal distance from either end, otherwise you will have the valve doing different things at either end of its stroke. Make sure there are no burrs anywhere, and rub the valve on your flat file to get its under surface flat and smooth. Make sure you don't round off any of the four bottom edges.

**Valve spindle.**

This is simply a length of 3/32 in. phosphor bronze or stainless steel, threaded at one end 8 BA., and provided with a groove at the other, as can be seen in Fig. 71. By rights, of course, this groove should be turned, if you have a 1/32 in. parting-tool and a high-speed collet lathe, and the "know-how" to use them both. Otherwise it can be put in with a small flat file, using the edge, with the face held against the front of the chuck-jaws.

The valve keeper, Fig. 72 must surely be the fiddliest bit on the whole engine, and like the valve and any similar parts should be finished as far as possible before

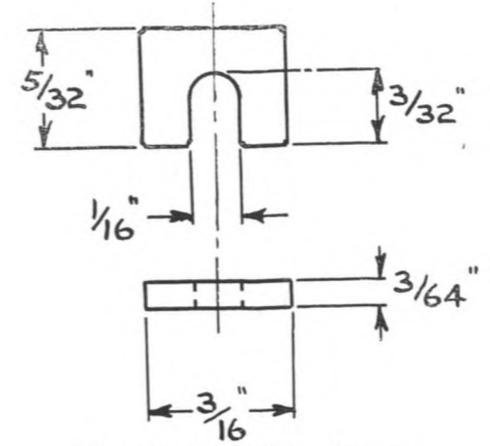


Fig. 72. The Valve Keeper.  
(four times full size.)

cutting it off the end of the strip. If the groove in your valve-spindle comes out a little wider than the 1/32 in. shown, this little plate should be made proportionately thicker material, as there must be no longitudinal shake of the valve on the spindle to cause "lost motion" on the valve. Make sure there are no burrs, particularly round the edges of the little slot in the keeper; in fact you can go round this slot with your small files and put a little chamfer all round it, in case there is a slight radius in the bottom of the groove in the spindle.

We show the assembly of the valve in the steam-chest in Fig. 73, so that you can see how it will go together, but for the present the steam-chest and its cover should be assembled to the cylinder-block *without* the valve or spindle.

*Materials and castings for "Aladdin" may be obtained from Messrs Luken's O' Birmingham.*

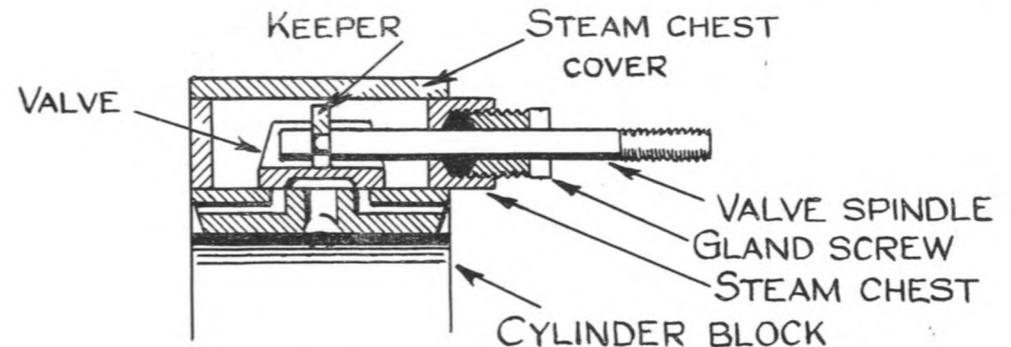


Fig. 73. Assembly of the Valve in the Steam-chest.