

Whilst a rim lock is shown at A and B, Fig. 54, the less conspicuous mortice lock with knob or lever handle furniture may be preferred.

*Finger Plates* were often fixed to both sides of the stile of a panelled door just above (and sometimes below) the lock, but these are not now in much demand unless there is a likelihood of damage being caused to the paint or varnish by finger marks. These can be obtained in various sizes in bronze, oxidised silver, etc. (see J, Fig. 54).

DOORS SHOWN AT C, E, F, G and H, Fig. 48.—A detailed description of these doors is not necessary for their construction will be readily understood on reference to the details shown in respect to the single, two and four panelled doors. In every case the stiles are continuous, the rails are either tenoned or dowelled to them and the muntins are similarly secured to the rails.

MANUFACTURE OF PANELLED DOORS.—Doors are either (a) manufactured by machinery or (b) prepared principally by hand.

(a) MACHINE-MADE DOORS.—Reference has been made on p. 98 to the remarkable change in door-making which has taken place in recent years and to the enormous number of doors which are machine made. Mass production methods have been responsible for a large reduction in the cost of such doors and this supplies the chief reason for the very big demand for them. In the manufacture of what is termed a "standard" door, the whole of the operations of planing the timber, reducing it to the correct widths for the various members, forming the joints, gluing and finally cramping the members together to form both the frame and the door are done by machinery. Machinery is also employed to trim the door to the size of the frame, form the mortices for the locks (including the keyhole and hole for the spindle) and screwing the hinges to the door and frame.

Most of these doors are dowel jointed, as shown at J and M, Fig. 50, and the following is a brief description of the operations involved in the manufacture of such doors: The timber is sawn to suitable scantlings, artificially seasoned (which occupies from three to four days), taken to the planing machine where it is surfaced on both sides and edges, sawing machines cut the door panels, stiles and rails into correct widths, rails are bored, glued and dowelled by a machine in one operation, stiles are bored by a machine, glue is applied ("squirted") into the dowel holes in the stiles, rails with their projecting dowels are fitted into the holes in the stiles after the panels have been slipped into the grooves and, finally, the assembled members are cramped together to complete the door.

The better grade doors are used for good class work, but the majority of the cheaper doors are used for the more lowly priced houses.

(b) HAND-MADE DOORS.—Whilst machinery has eliminated most of the operations which were formerly performed by hand, there is still a demand for doors and similar framework which require a certain amount of hand preparation. This applies particularly to the highest quality framed and panelled doors and those which are not of standard size. The operations involved are: (1) setting

out, (2) forming mortices and tenons, (3) gluing and wedging up and (4) cleaning off.

(1) *Setting Out*.—This is the reproduction on a board (called a *setting out rod*) of the full size details of the door such as may have been prepared by the architect. This rod is usually of yellow pine or similar soft straight grained timber which is free from knots and is from 8 to 10-ft. long, 7 to 11-in. wide and  $\frac{1}{4}$  to  $\frac{3}{4}$ -in. thick; both edges are planed straight and parallel, and both sides, after being planed and smooth finished with fine glass paper, are either chalked or brushed over with a mixture of whiting and thin glue.

For a framed piece, such as a door, the rod would be set out as shown at A, Fig. 55, which indicates full size vertical and horizontal sections of the four-panelled door, casing, etc. illustrated in Fig. 54. Alternatively, the vertical section, called the *height rod*, is set out on one face of the board, and the horizontal section, called the *width rod*, is detailed on the reverse. The reference number of the contract, number of doors required, etc. are indicated on the rod.

The pieces of timber to be used for the various members should be carefully selected to obviate waste during conversion. If machinery is not available, each piece is cut down by means of a rip saw (see p. 127) and across the grain by a panel saw (see p. 127). The stuff is then *trueed up*. This is done by first testing for "winding" or "twist." A pair of *winding strips* (pieces of carefully dressed mahogany, 14-in. by 2-in. by  $\frac{1}{2}$ -in., with parallel edges) is used for this purpose, one being placed at each end on top and at right angles to the length of the timber when lying flat on the joiners' bench. If these strips are not parallel when sighting along their upper edges a jack plane (see 21, Fig. 67) is applied to the stuff until the highest parts are removed and the surface is perfectly true as proved by the strips and a straight edge. A trying plane (see 26, Fig. 67) is then used to give a smooth finish. The joiner pencils his characteristic mark, called a *face side mark* (see E and G, Fig. 55), on the face and this should always point towards the best edge. This edge, called the *face edge*, is then dressed by a jack plane and subsequently by a trying plane until it is straight, smooth and at right angles to the dressed face, a try square (E, Fig. 55) being used to test for squareness. He pencils his *face edge mark* on this edge and this may be a single stroke as a continuation of the face side mark (see F). Both face side and face edge must be perfectly true as all subsequent gauging and setting out operations are referred to them. A marking gauge (see 4, Fig. 67) is now used to mark off the width of the member, this mark being continuous from end to end and parallel to the face edge. A plane is applied to dress down to the gauge mark to form the *back edge*. The piece is gauged to the required thickness and the *back face* is then planed to remove any excess of wood down to the gauge mark.

The whole of the members having been dressed in this manner are marked, the position of the rails, depth of grooves, etc., being transferred to them from the setting out rod A. Thus, commencing with the stiles, one is placed on the height rod and the positions of the rails and  $\frac{1}{2}$ -in. depth of panel grooves are pricked on its face edge (see F, Fig. 55, which shows the lines transferred from