

L, M, N and O. The "V-jointed" type is formed by chamfering both edges of each board, and the "beaded" joint shows the bead worked on the tongued edge. These joints are effective in making the appearance of the door less objectionable when shrinkage takes place and the joints open. They are sometimes only tongued and grooved, occasionally they are ploughed and tongued, and in cheap work they are butt or square jointed (see R, X and P, Fig. 34). Two other forms of beaded joints are shown at S and T, Fig. 46; the latter shows hardwood tongues or feathers which are sometimes employed when thick battens are used. The thickness of the ledges is usually $1\frac{1}{4}$ -in. (nominal), and the middle and bottom ledges are wider than the top ledge, *i.e.*, 7 or 9-in. When employed for external doors, the top edges should be bevelled as shown at B, to prevent water lodging on them.

This is the simplest form of door and is frequently used for narrow openings and in positions where the appearance is not material, as for temporary sheds, coal-houses, external water-closets, etc. It is relatively cheap and is apt to sag, on account of its weight, towards the bottom of the free edge. This defect may not become so pronounced if the end and central battens are screwed and not nailed to the ledges. It also has a tendency to twist, especially if the timber is not of good quality and thin ledges are used.

Preparation of Door.—The ledged and battened door is made in the following manner: The planing (on both sides), grooving, tonguing, thickening, etc., machine operations of the tongued and grooved battens are as described on p. 62 for floor boards. The battens are fitted together on the joiners' bench and pencil lines are drawn across them to indicate the position of each ledge. A cramp (see Fig. 55) is applied near to one of the ledge positions and this ledge is lightly and temporarily nailed to the battens. The second ledge is then lightly nailed after the cramp has been applied near to it. The door is turned over on the bench, two rough pieces of wood are placed under the ledges, and wrought iron nails are driven through the battens and ledges. The nails are of sufficient length to project beyond the ledges when driven in, and as they pierce the rough pieces, the ledges are not damaged by splintering as the nails protrude. The door is finally reversed and the nails *clinched* or *clenched*, *i.e.*, the points are bent over and by means of a punch (see 10, Fig. 67) and hammer are driven below the face of each ledge. The battens are cut and dressed off level at the top and bottom. The edges of the battens should be painted before cramping as this prevents water from getting into the joints and setting up rot. If this is not done an unsightly appearance results when shrinkage occurs, due to the opening of the joints which exposes light unpainted margins. The backs of the ledges should also be painted prior to fixing.

Hanging and Fastening of Door.—The door is fitted between the rebates of the frame, a clearance of $\frac{1}{8}$ -in. (or "the thickness of a penny") being allowed between the edges of the door and the frame for the thickness of the paint which is applied subsequently, and also for expansion. The width of the

opening (below the head and also near the feet of the posts as the frame may not be absolutely square) is measured and transferred to the door. After allowing for the clearance, the door is placed lengthwise on edge on the floor, propped between the notch on the joiners' stool or trestle, and the uppermost edge is planed down (or "shot") to the mark made during measurements. The bottom is also planed to allow $\frac{1}{4}$ -in. clearance between the door when hung and the step or floor. The door is placed in position between the frame, a wedge is inserted between the floor and the door and forced in until the door is brought square with the frame. If the door does not fit correctly, any irregularities are noted and the door taken down and planed where necessary.

The door is now ready to receive the hinges. The form of fastening usually provided for this type of door is the T-hinge or *cross-garnet* (see A, Figs. 44 and 45). This is a wrought iron strap pivoted to a metal plate. The *knuckle* of the hinge is a pin round which two sections of the plate and the end of the strap are bent (see X, Fig. 45). The thickness of the strap varies from $\frac{3}{8}$ to $\frac{1}{4}$ -in., and its length increases in multiples of 2-in. from 10 to 24-in., measured from the centre of the pin. Two straps are secured either against the face of the battens (see A and G, Fig. 44) or screwed direct to the ledges (see H, Fig. 44). The plates of the hinges are screwed to the door posts. Those shown in the elevations in Figs. 44 and 45 are called *Scotch T-hinges* and are of $\frac{1}{8}$ -in. thick galvanised wrought iron. Thicker hinges are only used for heavy doors. Other hinges are shown at W and X, Fig. 45, and P, Fig. 46.

HARDWARE OR IRONMONGERY includes hinges and fittings such as bolts and locks; it also includes door knobs and handles (sometimes referred to as *door furniture*).

All that may be necessary for the ledged and braced door is a *thumb latch*. If additional means of security is required, either a *padlock* or one or two *barrel bolts* may be used. The former is an external fitting (as for an external tool-house door) whereas the bolts would be used to secure the door from the inside. Alternatively, a *rim dead lock* may be used in lieu of a padlock or barrel bolt, or a *rim lock* may be used instead of a thumb latch and rim dead lock. The following is a brief description of this hardware:—

Thumb Latch (see O, Fig. 45).—It is sometimes called a Norfolk or Suffolk latch and consists of: (1) a *back plate* with handle and pivoted *sneck*, (2) a *keeper* through which a (3) *beam* or *fall bar* passes to engage in a (4) *stop*. The usual length of beam is 7 or 8-in. and that of the back plate is about 9-in. Another type of thumb latch with two handles, each having a *sneck* which passes under the beam, is shown at A, B and C, Fig. 46. A complete fitting is usually of malleable iron, although for better-class work it is of bronze.

In fixing a thumb latch, a hole is made in the door through which the *sneck* is passed and the back plate is screwed to one face of the door. The keeper and plate to which the beam is pivoted are screwed to the opposite face of the door, the keeper (which limits the movement of the beam) being fixed near to the edge of the door. The plate to which the stop is attached is screwed to the inside face of the post.