

## CHAPTER FOUR

# JOINERY

*Syllabus.*—Doors, including ledged and battened, ledged braced and battened, framed ledged and battened, framed ledged braced and battened, panelled; frames and casings; methods of fixing frames, casings and doors; hardware. Windows, including solid frames with vertically hung sashes opening outwards, fixed sashes, boxed frame with sliding sashes, pivoted sashes, horizontal sliding sashes; hardware. Architraves, skirtings, picture rails and angle beads. Nails, screws and fasteners. Description and uses of tools.

JOINERY includes the setting out, preparation, framing and fixing of woodwork which is chiefly used as internal fittings and finishings. There are several broad differences between the crafts of the carpenter and joiner, although they are usually grouped together under "Carpentry and Joinery." These distinctions are: Carpentry is essentially structural, the timbers are left rough from the saw, the labour expended is small compared with the amount of material used, and most of the work is done on the building site. Primarily, joinery increases the habitability and appearance of a building and any stresses to which it is subjected are incidental, the wood is dressed, the labour is a large item compared with the volume of the timber employed, and most of this labour is carried out in the workshop. Joinery comprises the construction and fixing of doors and windows with their frames or linings, architraves, skirtings, stairs, panelling, cupboards and floor boards. The latter, for convenience, have been included in carpentry and some of the other items are described in this chapter.

### DOORS

External doors are secured or "hung" by metal *hinges* to solid wood *frames*, and internal doors are usually hung to wood *linings* or *casings*.

**FRAMES.**—A door frame consists of three members, *i.e.*, two uprights or *posts* which are secured at the top to a cross-piece called a *head*. The nominal sizes of these members vary but 4-in. by 3-in. and 4½-in. by 3-in. are common. The head usually projects from 2 to 4-in. beyond the posts, and these projections, called *horns*, assist in making the frame secure when it is built into the wall. These horns may be splayed (see s and the thick broken lines in the isometric detail at E, Fig. 44) and covered with splayed bricks to preserve the face appearance of the brickwork. A ½ to ⅝-in. deep recess or rebate is formed round the frame to receive the door. An alternative but less satisfactory check for the door is formed by *planting* (nailing) a ½-in. thick bead or *stop* on both posts and head, the beads being mitred at the angles (see K, Fig. 44).

**Joints.**—The head and posts of a frame are morticed and tenoned together, variations of the joints being: (a) closed mortice and tenon, (b) haunched mortice and tenon, (c) draw pinned slot mortice and tenon, and (d) double tenon.

(a) *Closed Mortice and Tenon Joint* (see E).—The head is morticed to receive the tenon on the post. The mortice and tenon must be correctly proportioned if failure of the joint is to be avoided, and the following are accepted rules:—

1. Thickness of tenon should equal one-third that of member.
2. Width of tenon should not exceed five times this thickness or a maximum of 5-in., whichever is the *less*. (Thus the maximum width of a ½-in. thick tenon would be 5 by ½-in. equals 2½-in., and the maximum width of a 1¼-in. thick tenon would be 5-in. and *not* 5 by 1¼-in. equals 6¼-in.)

The "thickness" and "width" of a tenon are indicated at E, and the "width" and "length" of a mortice are shown at F.

Wide tenons should be avoided as they (1) may shrink excessively, causing them to leave the wedges (see below), which thus become loose, (2) tend to bend when the joint is wedged, resulting in the splitting of the morticed members, and (3) require long mortices which tend to weaken the members.

These joints are *glued and wedged*, glue<sup>1</sup> being applied to the tenon and shoulders (see below) and the tenon is inserted into the mortice. Wedges, as shown, are dipped into the glue and driven in between the edges of the tenon and the mortice to secure the joint. Notice that the mortice is slightly enlarged and bevelled to receive the wedges. Oak pins or dowels, ⅜ to ¾-in. diameter, are sometimes used in addition to wedges. This is called a *pinned joint*, and examples of it are shown in Fig. 46. A hole is first bored through the head and tenon, and the pin is driven in after it has been dipped in glue.

(b) *Haunched Mortice and Tenon Joint* (see F, Fig. 44).—This joint is adopted when the frame is not built in as the work proceeds. Horns are not required, and therefore the width of the tenon is reduced, except for about ½-in. from the *shoulders* (or abutments at the bottom or *root* of the tenon), otherwise wedging would not be possible. This abbreviated portion or stump is called the *haunch*

<sup>1</sup> Glue is made from the hooves and sinews of cattle and horses. The glue is broken up, allowed to soak for several hours, placed in the container of the "pot," sufficient water is added to cover the glue which is then boiled for about twenty minutes, when it is ready for use. "Cold glues," prepared ready for use, are now available.