

as shown at E; in mass-produced doors these lock pieces are increased in length in order that the position of the lock may not be unduly restricted. The wide architrave (which should be in at least two pieces, if it exceeds 6-in., to prevent splitting if shrinkage occurs) is shown at A with rounded corners. To prevent opening at the mitres the joints should be either cross-tongued (see footnote to p. 72), or the horizontal member should be tenoned into the verticals and screwed from the back.

The framed flush door shown at B and G is that referred to in the specification "War Emergency British Standard 459: 1942."<sup>1</sup> The object of the specification is to ensure an economy in the use of timber. As shown, the skeleton framing consists of very light members, *i.e.*, 1½-in. by 1-in. stiles, top and bottom rails, ¾-in. vertical ribs at not more than 5-in. apart housed ½-in. into the outer rails, and ¾-in. (minimum) wide horizontal ribs, not exceeding 12-in. apart, glued to the vertical ribs and stiles. The top and bottom rails may be either dovetailed into the stiles, or the latter may be double tenoned into the rails, or the corners may be *combed jointed*, *i.e.*, corrugated metal saw-edge fasteners (see Fig. 66, Vol. I) are driven in. The framing is reinforced with 1-in. wide blocks at the hinges and lock block. Each side is covered with plywood of a minimum thickness of ⅛-in. This covering is shown at G finished flush with the edge; as explained on p. 68, this may result in the fraying of the edges of the plywood. As a protection against damage, an external door has a 9-in. by ⅜-in. (3-ply, resin-bonded) *kicking plate* fixed at the bottom at each side. This plate or ledge has its top edge bevelled.

The semicircular headed door at C, detailed at K, has a small glazed panel. The head of the door framing may be in two pieces only, with the central joint combed or cross tongued; or alternatively, it may be built-up in two thicknesses like the frame at D, Fig. 23, described on p. 66. The joints between the head and the stiles may be either tenoned, as shown, or they may be combed jointed; hammer-headed key joints (see Fig. 23) are not necessary, as the joints are not exposed to view and because of the stiffening effect of the plywood facings. The treatment at the edges shown at K is an alternative to the details at F, H and J. The outer veneer only of the 3-ply facing covers the framing. This veneer may be highly decorative. Its edges are vulnerable to damage, especially at the striking stile, and, as shown, they are bevelled to minimize this tendency. The detail of the glazed panel is similar to those shown in Fig. 24. The top of the skirting is assumed to be moulded with a fillet and curve similar to the architrave; this results in a mitre and a satisfactory finish (see C).

The solid or laminated core type of flush door is shown at D and detailed at H. The laminæ are only ⅝-in. wide and this detail therefore shows an application of laminboard (see p. 103). Blockboards (the laminæ are not greater than 1-in. wide, see p. 103) are also used as cores. The tongued edging slips are also dovetailed to receive the edges of the plywood facings which, after being glued,

are sprung into position and pressed. In order to provide a contrast in colour, these slips may be of a different wood to the plywood facings. An effective appearance results if the section of the skirting is similar to the outer splay of the simple architrave; the resulting mitres are shown in the elevation at D. This is a good type of door, although heavy, and is more highly fire-resisting and sound-insulating than the skeleton framed variety (see p. 51).

Another form of fire-resisting and sound-insulating door is shown at E and detailed at J, compressed granulated cork being filled between the members of the skeleton frame (see p. 51). A lock block is shown at each side, and therefore either stile may be hung.

The timbers used in the manufacture of mass-produced flush doors include alder, beech, birch, Columbian or Oregon pine, Canadian red pine and gaboan. These are usually painted or stained. The outer veneers of the plywood facings of superior doors are generally of hardwood, of which there is a large variety used. They are often left in their natural colours, the decorative effect depending upon the grain and texture of the woods. Oak, walnut, mahogany, Indian silver greywood, sycamore, Indian laurel, black bean and ash are a few of the many hardwoods used for this purpose. An outer veneer may consist of a single sheet or it may comprise several inlaid pieces arranged in squares or rectangles. Cross-bandings (narrow inlaid strips) of a dark wood—such as black bean—are effectively used to divide lighter coloured woods into panels.

## WINDOWS

A description of casements, dead lights, window with cased frame and vertical sliding sashes, window with pivoted sash and window with horizontal sliding sash is given on pp. 107-122, Vol. I. The following types are dealt with here: (a) Window having a semicircular headed cased frame and vertical sliding sashes, (b) three-light windows and (c) metal windows.

(a) WINDOW WITH SEMICIRCULAR HEADED CASED FRAME AND VERTICAL SLIDING SASHES (see Fig. 26).—The elevation, section and plan at A, B and C show a large window of this type fixed in an opening in a brick wall with stone dressings.

With the exception of the head, the construction of the frame is similar to that described on pp. 113 and 114, illustrated in Figs. 60 and 61, Vol. I. The usual construction of a semicircular head is shown here at E, F and R, Fig. 26. The soffit lining is built-up in two thicknesses of 2-in. thick segments, divided by the parting bead, sawn to the required curve and glued and screwed together to overlap with joints normal to the curve. The inner and outer linings are glued and blocked to the soffit lining, the tongues and grooves (indicated by broken lines at R) being often omitted because of the thickness of the head, which exceeds that of the tongued pulley stiles. In lieu of the tongued edges shown, the pulley stiles are sometimes square edged; the edges are well painted to protect them before the stiles are nailed to the linings; the inner lining is slightly

<sup>1</sup> By courtesy of the British Standards Institution.