

An alternative and less conspicuous form of keeper is shown at N, and this is fixed to the edge of the door. A similar stop fitting may be fixed to the edge or jamb of the post.

Padlock with Hasp and Staple (see A, Fig. 44, and P, Fig. 45).—The hasp and staple are usually of iron and the padlock is of galvanised iron, brass or bronze. The staple is screwed to the door post and the hasp is secured by two small bolts to the door. When the door is closed, the slotted hinged end of the hasp is passed over the staple, and the hinged ring of the padlock (after being passed through the eye of the staple) is "pressed home" to lock it.

Barrel Bolt (see A and Q, Fig. 45).—It is made of iron, brass or bronze. The length varies from 3 to 15-in., a 6-in. bolt being sufficient for a ledged and battened door. The plate is screwed to the inside of the door and the bolt engages or "shoots" in a metal *socket* or *staple* fixed on the door frame. Sometimes two bolts are fixed horizontally as shown at A, or they may be fixed vertically when one socket is let into the head of the frame and the other (similar to s') is let into the stone or concrete step.

Rim Dead Lock (see R, Fig. 45).—This consists of a steel case (containing a brass bolt, spring, etc.) which is screwed to the face of the door, and a staple which is screwed to the frame to receive the bolt when the door is locked. The key required to operate the bolt is comparatively long as it is needed to actuate the lock from both sides of the door. The lock may be obtained with one or two levers (see below). An *escutcheon* (see R') or holed metal plate is sometimes fixed on the face of the door opposite to that to which the lock is attached to prevent the "keyhole" from becoming enlarged and damaged by continued action of the key. A *plate lock* or *stock lock* may be used for an external door of this type; this is similar to the above lock but the metal case is inserted in a wood block.

(b) LEDGED, BRACED AND BATTENED DOOR (see A, B and C, Fig. 45).—This is a ledged and battened door to which inclined struts or *braces* have been added. These braces increase the rigidity of the door and prevent it drooping at the "nose," a defect which is common to the ledged and battened door. These braces must *incline upwards from the hanging edge*, otherwise they would be useless in counteracting the tendency for the door to droop out of square. The position of the middle ledge should be such as to allow the braces to have the same inclination, otherwise the appearance is not satisfactory; the appearance resulting when the braces are lined straight through is sometimes preferred (see E, Fig. 45). The width of the braces varies from 4 to 7-in., and they are usually out of 1½-in. stuff; they are housed and not tenoned into the ledges (see detail G, Fig. 45).

An alternative ledged, braced and battened door, suitable for a cottage where a simple type of door is required, is shown at E. It consists of alternate wide and narrow battens which are 1 and 1½-in. thick respectively. See the detail plan at F which shows the battens tongued and grooved and V-jointed, and the T-hinges (similar to that at X) which pass through the thicker batten.

The ledged, braced and battened door is used for similar purposes as described for the ledged and battened door, but on account of its greater strength it may be selected for larger openings. It is made as described on p. 88, the battens being nailed to the ledges and the braces afterwards fitted to the ledges and clinch-nailed to the battens.

HARDWARE.—This door is generally hung with T-hinges; those shown at A are 22-in. Scotch T-hinges, and another form is shown at X. The furniture may consist of a thumb latch and a dead lock as already described. Alternatively, a *rim lock* or a *rim latch* may be used instead of a thumb latch and a dead lock. Barrel bolts may be used in addition, as shown at A.

There are many variations of latches and locks, the broad difference between each being:

A *rim latch* is fixed to the face of a door and consists of a casing which contains one *bevelled* bolt or latch (which is operated by a handle attached to a spindle) and a small locking bolt (see U).

A *rim dead lock* has one bolt only which is actuated by a key (see R).

A *rim lock* has two bolts, one controlled by a handle and the other by a key (see T); it is fixed to the face of the door.

A *mortice latch* has only one latch (or bevelled bolt) and the case is fitted within the thickness of the door and is only visible on the edge of the door.

A *mortice lock* is similar to the rim lock in that it has two bolts, but the case is only seen on the edge of the door as it is fixed in a mortice formed in the door (see H).

The *rim latch* shown at U is a steel case about 5-in. long which contains a brass bolt and a spring which acts upon the bolt to maintain it in the staple when the door is closed. The mechanism is similar to that of the latch bolt of the mortice lock described below. The small locking bolt is used when required to prevent the door from being opened by the knob from the outside.

A *rim lock* is obtained in standard sizes varying from 5 to 8-in. long by 3 to 4-in. deep. A typical example is shown at T, Fig. 45. It has two bolts, *i.e.*, a "dead" bolt operated by a key and a bevelled or latch bolt operated by the handle and (when the door is being closed) by the action of the bevelled end sliding over the edge of the staple.

Mechanism of Rim and Mortice Lock.—The internal construction of a rim lock is similar to that of a mortice lock. An interior of a mortice lock¹ is shown at J, and the following description refers to (1) the lock bolt mechanism and (2) the latch bolt mechanism.

(1) The lock bolt is of brass or phosphor bronze or gunmetal and has a pin or *bolt stump* attached to it to form a pivot for the three thin brass *levers* (hence this would be described as a "three lever lock") which are fitted over it; each lever has two recesses, K and L, with a narrow connecting slot through which a small *lever stump* (connected to the bolt) passes when the bolt is operated; attached to each lever is a fine metal spring. When the door is unlocked, the lever stump occupies the upper portion of recess K. To lock the door, the key is inserted in the keyhole formed in the phosphor-bronze *bush* which has three thin raised rings called *wards*, the key (see sketch) being shaped to fit these wards. When the key is turned, it causes the bolt to move outwards and the pivoted levers to swing upwards until the slot between the recesses is opposite to the lever stump. After the key (indicated by broken lines) has been rotated until it is free of the lower edge of the bolt, the lever springs shoot the bolt into the staple (in the case of the rim lock) or *striking*

¹ Manufactured by Messrs J. Gibbons, Wolverhampton.