

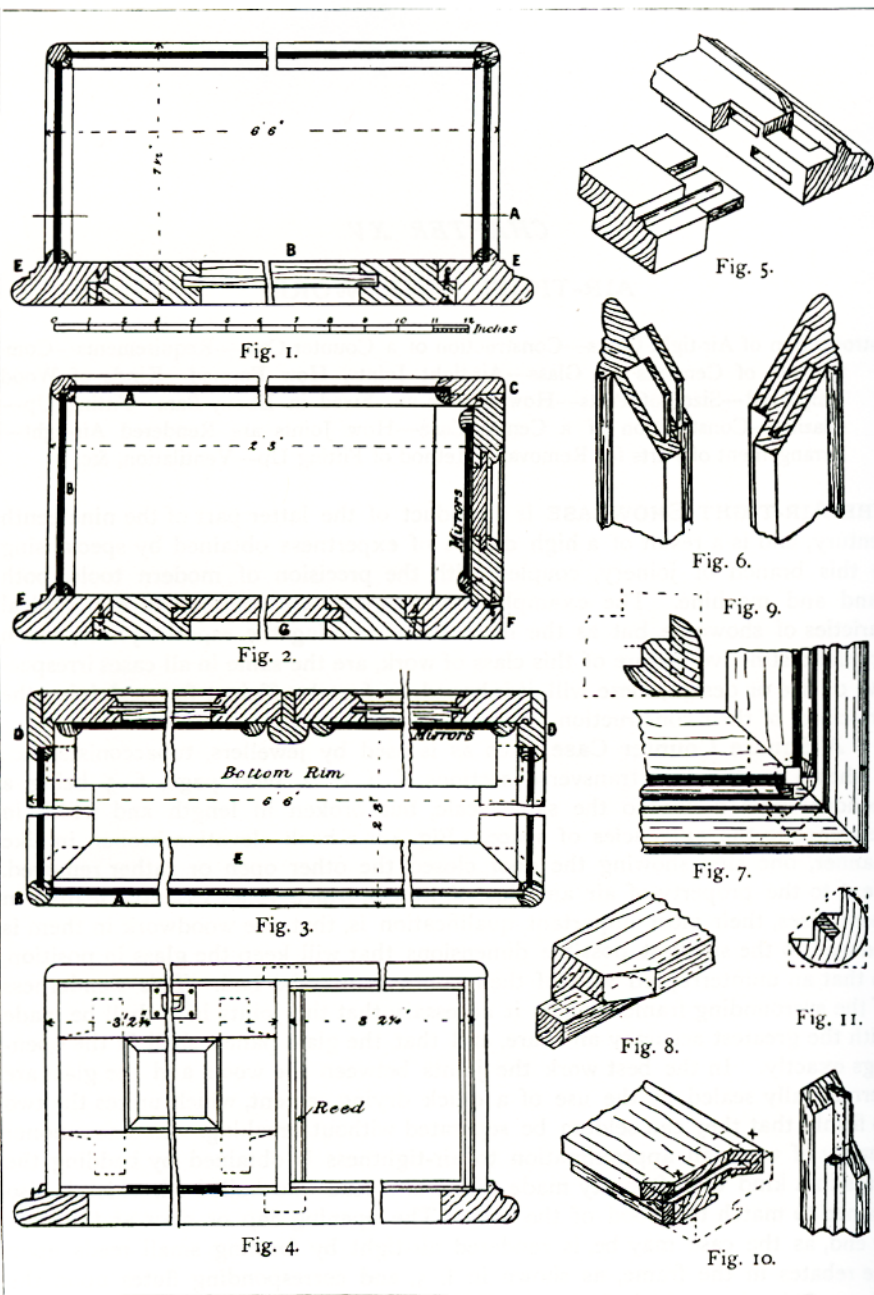
## CHAPTER XV.

### AIR-TIGHT CASE WORK.

Introduction of Air-tight Cases—Construction of a Counter Case—Requirements—Composition of Cements for Glass—Air-tight Joints, How Formed—Kinds of Wood Employed—Sizes of Parts—How Screws are Fixed in Ebony Bars—Fitting Up—Glazing—Construction of a Centre Case—How Joints are Rendered Air-tight—Arrangement of Parts for Removal—Method of Fitting Up—Ventilation, &c.

**THE AIR-TIGHT SHOWCASE** is a product of the latter part of the nineteenth century, and is a result of a high degree of expertness obtained by specialising in this branch of joinery, coupled with the precision of modern tools, both hand and machine. The examples herein given are confined to two typical varieties of showcase, but as the methods of forming the especial joints, which are the distinctive feature of this class of work, are the same in all cases irrespective of size or design, these will, it is hoped, be found sufficient for explaining the principles of their construction.

**A Square Counter Case**, such as is used by jewellers, tobacconists, &c., is shown in the two transverse sections, f. 1 & 2, next page, f. 3 being a sectional plan drawn to the same scale, but broken in length and width in deference to the exigencies of space. Fig. 4 is a back elevation broken in like manner, one side showing the door closed, the other open or rather removed. Next to the property of air and dust tightness, which is an essential feature in these cases, their most important qualification is, that the woodwork in them is reduced to the smallest possible dimensions that will keep the glass in position, so that an uninterrupted view of their contents may be had. This slenderness of the surrounding frame renders it necessary that the joints in it shall be made with the greatest accuracy and care, and that the glass panels shall fit the openings exactly. In the best work the joints between the wood and the glass are hermetically sealed by the use of a quick drying cement, which unites the two so firmly that they can seldom be separated without breaking. In a commoner quality of work an approximation to air-tightness is obtained by bedding the glass in a kind of soft putty made with white lead and boiled oil, which is also stained to match the wood of the case. The opening flap or door at the back or end, as the case may be, is rendered air-tight by forming small reeds upon the rebates in the frame, as shown in f. 5, and corresponding flutes upon the edges of the door which fit together accurately. These are worked by special planes made in pairs known as "air-tight joint" planes. For the shutting edge a reed and hollow are worked side by side, forming a miniature hook joint, f. 10.



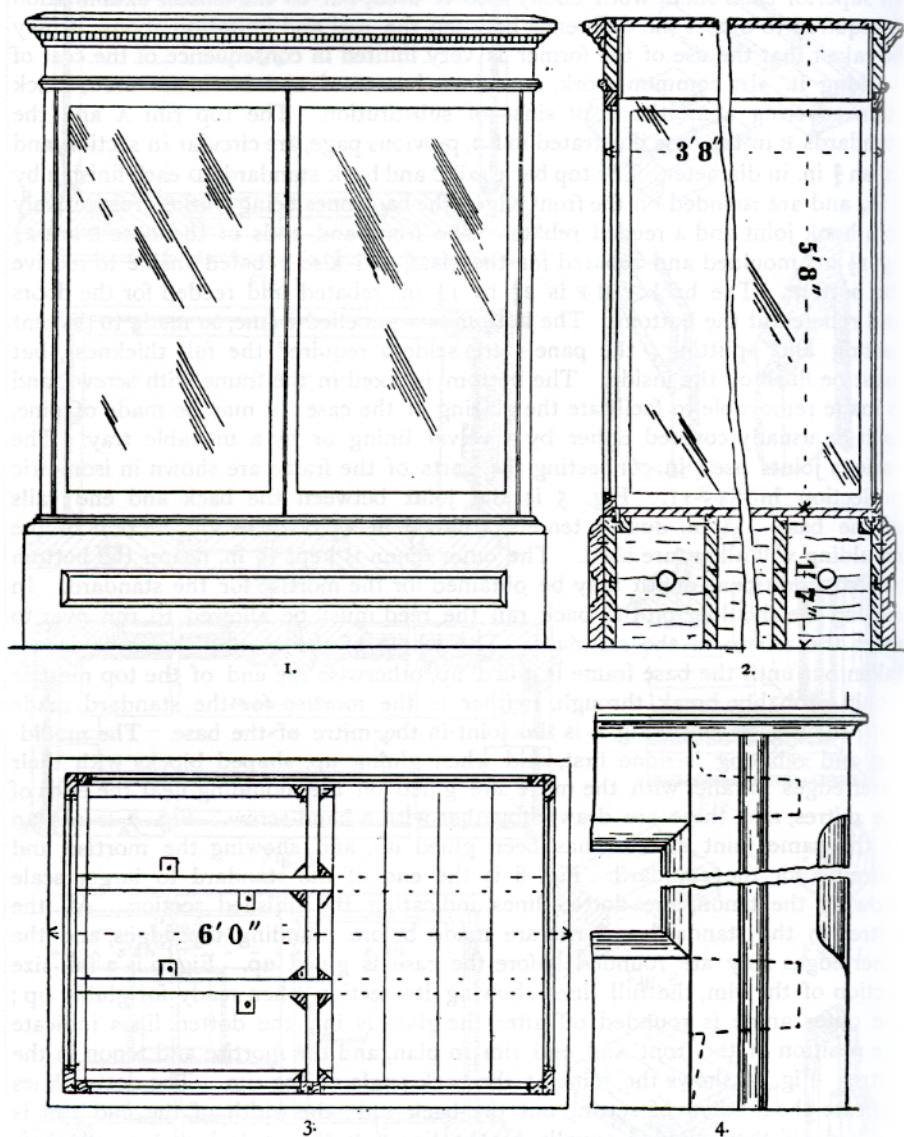
AN AIR-TIGHT COUNTER CASE.

1, 2. Sections. 3. Plan. 4. Back Elevation. 5-11. Sketches of Joints.



**The Wood** usually employed for these cases is clean straight-grained Honduras mahogany, of course perfectly dry, and polished both "bright" and "black." In superior class small work ebony also is used, but as the closest examination is required to detect the difference between the real and imitation ebony, it may be taken that the use of the former is very limited in consequence of the cost of working it. In common work, American basswood and birch are used, black stain covering a multitude of sins—of substitution. The top rim A and the standards B in the case illustrated in f. 2, previous page, are circular in section, and finish  $\frac{3}{4}$  in. in diameter. The top back rail C and back standards D each finish 2 by  $\frac{3}{4}$  in., and are rounded on the front edges, the back ones being worked respectively to a hook joint and a reeded rebate. The front and ends of the base E are 2 $\frac{3}{4}$  by 1 $\frac{1}{2}$  in., moulded and rebated for the glass, and also rebated inside to receive the bottom. The back rail F is 2 $\frac{3}{4}$  by 1 $\frac{1}{4}$  in., rebated and reeded for the doors and rebated at the bottom. The bottom is a panelled frame, so made to prevent casting and splitting; the panels are seldom required the full thickness, but must be flush on the inside. The bottom is fixed in the frame with screws, and is made removable to facilitate the glazing of the case; it may be made of pine, as it is usually covered either by a velvet lining or by a movable tray. The various joints used in connecting the parts of the frame are shown in isometric projection in f. 5-11. Fig. 5 is the joint between the back and end rails of the base.  $\frac{3}{8}$ -in. double tenons, stubbed in as deep as the section of the moulding will allow, are used. The outer tenon is kept  $\frac{1}{8}$  in. nearer the bottom so that additional depth may be obtained for the mortise for the standard. In cutting the shoulder on the back rail the reed must be allowed to run over to meet the rebate in the standard. The whole of the seating, however, is not taken out until the base frame is glued up, otherwise the end of the top mortise would probably break through, neither is the mortise for the standard made until the glue is dry. Fig. 6 is the joint in the mitre of the base. The moulding and rebating is done first, and when gluing up, shaped blocks with their outer edges parallel with the mitre are glued on the moulding near the ends of the mitres, and these are drawn together with a hand-screw. Fig. 7 is a plan of the same joint after it has been glued up, and showing the mortise and mitreing for the standard. Fig. 8 is the end of the standard to larger scale showing the tenon, the dotted lines indicating the finished section. All the mitres in the standard and rim are made before rounding the edges, and the inner edges only are rounded before the case is glued up. Fig. 9 is a full-size section of the rim, the full lines showing its section when ready for gluing up; the outer angle is rounded off after the glass is in; the dotted lines indicate the position of the front and end rim in plan, and the mortise and tenon in the mitre. Fig. 10 shows the joint at the back angle of the rim. The dotted lines indicate the method of setting out the back rail; the width of the end rim is marked off, then divided equally by the line X X, the central part of which is cut in and becomes the joint shoulder; from the intersection of the outside lines with the front and back edges mitres are drawn with the templet. The width of the back rim being set off on the end piece, a gauge set to half the width of the latter is run on to obtain the joint, and mitres are marked in like manner from the sight lines. A similar mortise to that shown in f. 7 is made

in the top rim after it is glued up for the tenons of the standard, but previously a thin piece of hardwood should have been glued over the top of the



AN AIR-TIGHT FLOOR CASE.

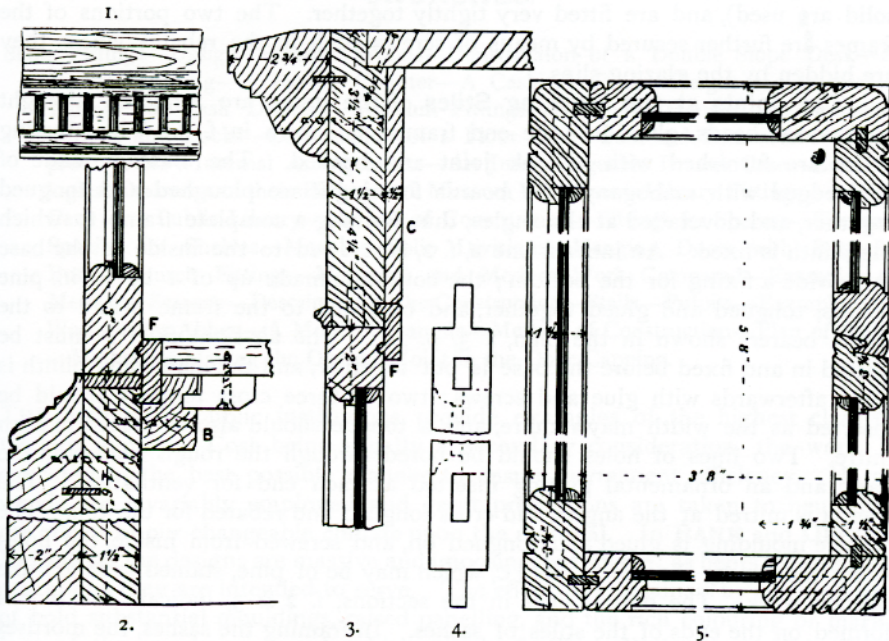
1. Elevation. 2. Section. 3. Plan. 4. Enlarged Detail of Sash Stile.

mitre to strengthen it whilst it is being mortised and fitted. The base rim should be glued up, before the bottom frame is made, so that a good fit may be ensured. The doors are framed together with stub mortises and tenons, the



laying members running through and the upright ones framed between them, as shown in f. 4, p. 242, so that no end grain should come in the hook joint.

**To Fit the Glass in,** the case is turned upside down upon a glazing frame—that is, an open frame with a true surface somewhat larger than the case, and raised about 3 in. from the bench by bearers so that the hand can be introduced beneath to manipulate the glass—straight strips are tacked around the rim to keep it in position, and the top plate is bedded in upon a cement made with red and white lead, knocked up in oil and japaner's gold size or terebene, with lamp black substituted for the white lead for black work. The edges of the glass and the rebates should be blacked to prevent reflection. The end plates are next bedded and inserted, being kept up with a light strut whilst the



AN AIR-TIGHT FLOOR CASE DETAILS.

1. Elevation of Cornice. 2. Section of Bottom of Case. 3. Section of Top of Case.  
4. Corner Standard. 5. Enlarged Section of f. 1, p. 244.

front plate is got in; then the quadrant fillets are screwed in, securing all in place. To facilitate the fixing of these fillets when ebony is used for the case, screwing slips of soft mahogany are glued into grooves made in the internal angles, as shown in f. 11, p. 242; the dotted lines show the preparation of the stuff for ploughing. The doors are sometimes lined with velvet inside, but frequently have mirrors fixed on them, as shown in the sections.

**A Centre or Floor Case** is shown in elevation in f. 1, section in f. 2, and plan in f. 3, previous page. Enlarged details are shown in f. 1-5 above. These cases are intended to be stood in the centre of the floor, so that their contents may be viewed from all sides, and they are provided with deep plinths or bases

to bring the goods within easy view, and also to protect the glass from breakage. As they are usually too large to pass through doorways when complete, they are generally made in several pieces, as shown, and fixed together *in situ*.

**The Base and the Cornice** are each complete frames, into which the three glazed frames, forming the side and ends of the central part of the case, are fixed by means of tenons cut on the ends of the stiles or standards, as shown in f. 4, previous page, the joints at top and bottom between them being made air-tight by the tongued and reeded hardwood fillets F, f. 2 & 3, which are glued around inside the base and fascia. The projecting portions of these fillets are of course kept free from glue. The joints between the three fixed sides of the case are grooved and cross tongued (sometimes double tongues worked in the solid are used), and are fitted very tightly together. The two portions of the frames are further secured by means of screws sunk in the rebates, where they are hidden by the glazing slips.

**The Joints at the Hanging Stiles** of the doors are rendered air-tight by inserted beads, glued into the end frames, as shown in f. 5. The Meeting Stiles are furnished with a hook joint and beaded. The Base is made of deal, edged with mahogany; the boards forming it are ploughed and tongued together, and dovetailed at the angles, thus forming a complete frame to which the plinth is fixed. An inner frame B, f. 2, is screwed to the inside of the base to provide a fixing for the bottom; the bottom is made up of 1 by 10 in. pine boards, tongued and glued together, and buttoned to the frame B and to the rough bearers shown in the plan, f. 3, p. 244. The air-tight fillet F must be mitred in and fixed before the base is put together, and the mahogany plinth is fixed afterwards with glue and screws; two or three cross tongues should be inserted as the width may require, and a tongue should also be placed in each mitre. Two lines of holes should be bored through the rough bearers in the base, and an ornamental grating inserted at each end for ventilation. The Fascia is mitred at the angles, and cross tongued and rebated for the top. The cornice moulding is glued and tongued on, and screwed from inside, the holes being hidden by the cover piece C, which may be of pine, stained to match the outside work. The dotted lines in the sections, f. 2 & 3, indicate the tenons formed on the ends of the stiles of sashes. In framing the sashes, the mortises are stopped, as shown in f. 4, p. 244, when the ends of the tenons would show on the face; the mortises should be made tapering in depth, and the tenons cut to fit them tightly, so that when forced up by the cramps they will be very firm; the edges of the sashes that are not seen can be mortised right through and wedged. The hook joint stiles in the doors should be double tenoned. Fig. 4 also shows the stops at top and bottom of the ovolo moulding on the angles of the case.