

regard to the small curl squares. The strips should be gauged off at an angle of 80° with the centre line of the curl, and then the squares can be gauged off to the exact size required. These pieces should all be marked, so that when glued down they will be in the same relative position as when in the leaf. A mixture of shades and colour is thus avoided. A half square is then prepared and glued in the corner. Then a half lozenge shape is fitted, if necessary, with a shoulder plane and shooting board to the exact shape. A whole square of curl is then glued down, and so on piece by piece until each side, etc., is finished. The work takes some time to complete, and when stood aside a board should be placed on the veneer in order to prevent possible buckling. When quite dry the paper is cut round and each design shows complete with paper on one side.

To veneer the box, one side is well glued, and after the glue has chilled, the veneer is pinned in position with the paper uppermost. A wooden caul is then heated and then cramped and hand-screwed down. Each veneered surface is treated in this way, and then all the paper is toothed off the veneer. The square edges are next inlaid by cutting small rebates to receive $\frac{1}{8}$ -in. square lines. These should be glued in, and the box bound round with tape until the glue is dry.

After the box is thoroughly dry it should be scraped and properly glass-papered up prior to gauging and sawing off the lid. The edges are then planed to fit, and beads are fitted inside the lid as shown in the section through the top (Fig. 22), which ensures the surface of the box remaining exactly level when the lid is down.

Special hinges should be used to attach the lid. They are called box hinges, and allow the lid to fall back a little beyond the perpendicular. A box lock is next fitted, and then the feet. The escutcheon is intended to be cut out of either mother-of-pearl or ivory with a fret-saw, and then inlaid. The tray is quite simple in

character, and may be slid from side to side on the thin fillets shown.

JEWEL-BOX AND HAND-MIRROR

The two half-tone reproductions (Figs. 23 and 24) show a jewel-box made in mahogany, inlaid with satinwood. Later the making of a hand-mirror to match this box is described.

The finished measurements of the box are $7\frac{1}{2}$ in. by $4\frac{1}{2}$ in. and $3\frac{1}{2}$ in. high. A part elevation and section of the box are shown by Fig. 25, and a plan by Fig. 26. The four sides are of $\frac{3}{8}$ -in. thick mahogany and the top and bottom of $\frac{1}{4}$ in. For the sides, a piece is prepared in one length 2 ft. by $2\frac{1}{4}$ in., and on each long edge a slip of the sycamore is glued, to be finished to $\frac{1}{8}$ in., which will make the sides $2\frac{1}{2}$ in. wide. When the piece is cleaned up on both sides and evenly thickened and the edges planed straight to the correct width it may be marked across square for the four box sides, which may then be cut. They are to be dovetailed together in the way known as "mitre-dovetail" or "secret-dovetail." In this case, it is as if the wood box sides were of $\frac{1}{4}$ in. thickness, ordinary dovetailed and covered on the outside with wood of $\frac{1}{8}$ in. thickness, mitred at the corners. But it is worked in the solid as in making lap dovetails, with the laps $\frac{1}{8}$ in. over to be mitred. If the setting out is done correctly, there need be little chance of failure; but, of course, neat fitting is indispensable. The cross marks shown in Fig. 28A (p. 1047) indicate waste, and the dotted lines show where the box will have to be cut through to form the lid, which it is necessary to consider in setting out the dovetail pins.

When the joints are all made, they may be glued up, and after observing that it is quite square and true, may be left in a very dry place to set. In the meantime the bottom and top of $\frac{1}{4}$ -in. thick mahogany must be prepared. They are glued in place and secured with screws ($\frac{7}{8}$ -in. No. 4), three to each edge, the heads being countersunk flush with the bottom; but sunk $\frac{1}{8}$ in. below the

surface of the top, in view of the satinwood banding which has to be inlaid round the margin, and covers the screws.

The centre of the lid is inlaid with a

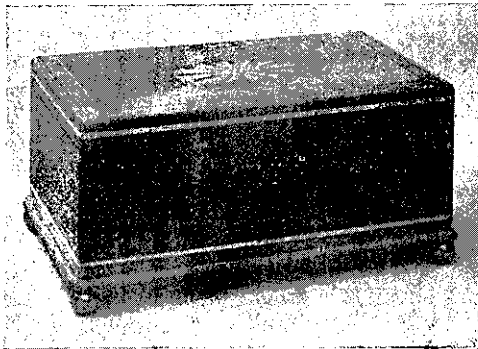


Fig. 23.—Jewel-box (Closed)

fan-oval ornament of satinwood and green sycamore. This and the banding are stock patterns, which can be bought for so small a sum that it would not pay to make one. It is shown in Fig. 26. The banding is inlaid first, by making a cut with the cutting gauge $\frac{1}{8}$ in. on the margin and $\frac{1}{16}$ in. deep, and another $\frac{3}{8}$ in. (the width of the banding) inside it. The waste between is then pared out and scraped level with a $\frac{1}{4}$ -in. chisel, to allow the banding to lie in quite neatly and nearly level, the corners being cut to a mitre. For inlay work it is essential to have the glue in good working condition; it should be hot, strong and thin enough to run freely. It is also an advantage to warm the work. The glue is run plentifully into the groove, and the banding laid in quickly and pressed down with a suitable flat iron or other weight to squeeze out the glue. It is advisable to keep going over it until no part shows any tendency to rise.

The fan-oval may then be inlaid. It has paper glued over it at one side to keep it together and this must be the outside. To get it true in position, the lid should be pencil-lined lengthwise and across the centre, to correspond with the lines on the oval, as shown in Fig. 26, therefore it must be marked on the paper

side. Whilst being held in position, it is marked round with the sharp point of a knife, then cut to about $\frac{1}{16}$ in. deep, and the waste pared away as was done for the banding. When it is ready for gluing in, the place for it should be warmed and glued, and the paper side of the oval wetted with hot water and immediately placed in and pressed with the hammer to work out the superfluous glue. In doing this the paper gets rubbed off, and sometimes some of the sections have an inclination to rise; but it must be persevered with, and it might be necessary to place over it a piece of paper, then a well-heated flat piece of wood cramped or weighted down. After about ten hours' rest in a dry, warm place to set, the wood may be removed; but the inlay should be allowed as much time as convenient to set—at least several days—before being cleaned up with the steel scraper and glasspaper.

When this is done the square corners should be rounded off with the glasspaper wrapped over a cork rubber; then the sides may be marked $\frac{5}{8}$ in. from the top surface, and cut through square and



Fig. 24.—Jewel-box (Open)

true with a fine saw, to form the lid. The sawn edges will require lightly planing, and the lid can be hinged with box-hinges, so that it can only open upright

and cannot fall back. The lock also can be put on, and an oval of satinwood is let in at the key-hole.

Under the bottom, slips are put on, to stand forward about $\frac{1}{2}$ in. as a beading.

They are of 1-in. by $\frac{3}{16}$ -in. section, mitred at the corner and fixed in place with glue and screws. Under these at each corner ball feet of brass are screwed on (see Fig. 25). The box should now be rubbed

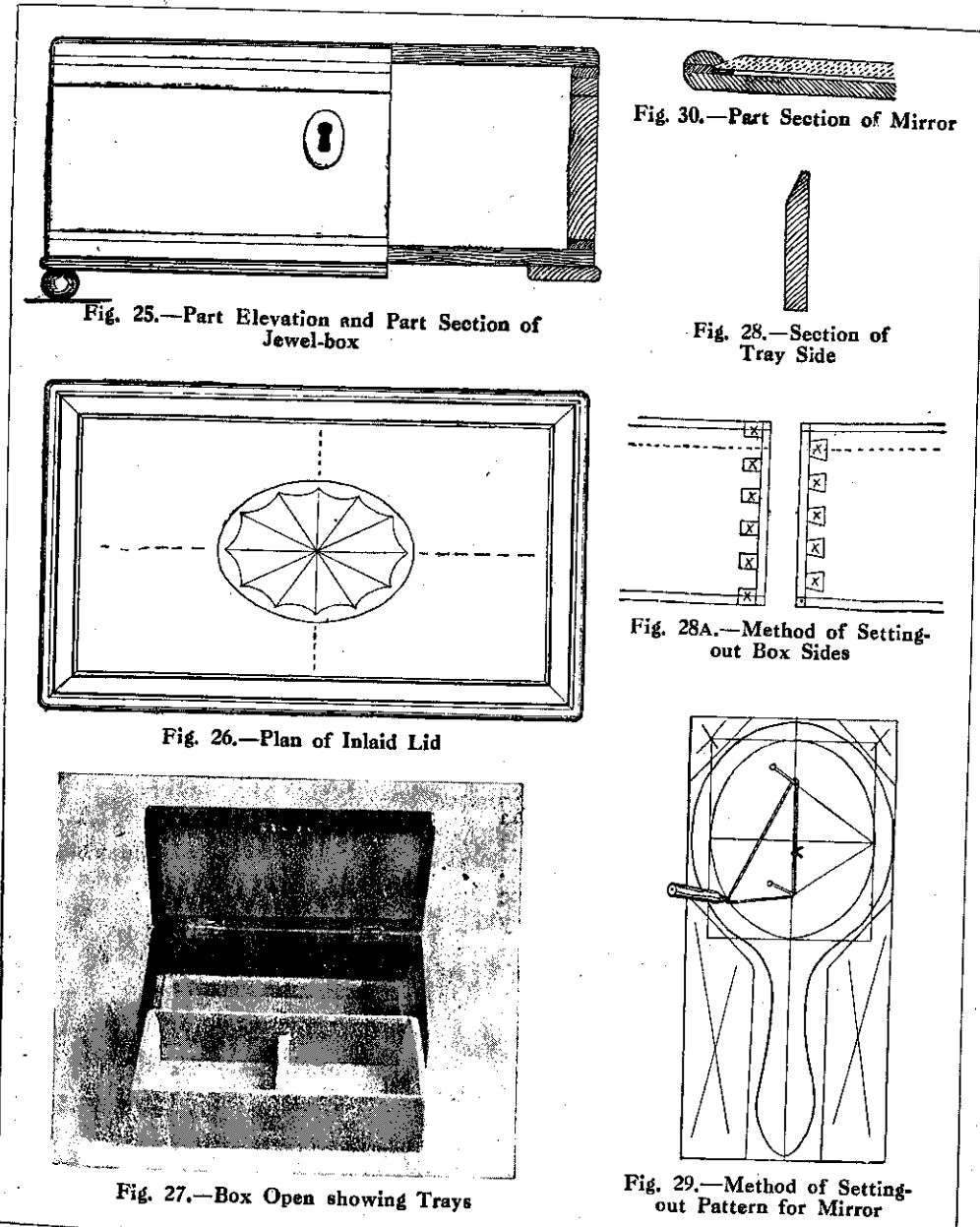


Fig. 25.—Part Elevation and Part Section of Jewel-box

Fig. 26.—Plan of Inlaid Lid

Fig. 27.—Box Open showing Trays

Fig. 30.—Part Section of Mirror

Fig. 28.—Section of Tray Side

Fig. 28A.—Method of Setting-out Box Sides

Fig. 29.—Method of Setting-out Pattern for Mirror

all over with linseed oil, and left a few days to dry in, when it can be french-polished.

The box is fitted with two trays, as shown in Fig. 27, lined with a good quality grey velvet. The bottom tray is $\frac{1}{2}$ in. deep, and the other one rests on it, and of accurate depth so that the velvet-covered sides stand up about $\frac{1}{4}$ in. higher than the mahogany box sides to go up into the lid, which also is to be lined on the underside. The upper tray is made to fit fairly close so as to seem permanent and keep the lower place secret; but by a steady pull gripping the centre division piece it can be lifted out (see Fig. 27). It cannot be pulled out hurriedly on account of the vacuum. The velvet inside the lid when closed presses over the edges of the tray, keeping it dustproof and practically airtight. The bottom tray is composed of four slips of wood, $\frac{3}{8}$ in. by $\frac{1}{4}$ in. in section, for the sides and a bottom of thin stiff cardboard. The velvet is glued on before they are fixed together with fine wire nails. The method is to cut the cardboard for the bottom, and fit in the slips of wood, allowing for the thickness of the velvet, which may then be cut for each piece. For the slips it must be cut about $1\frac{3}{4}$ in. wide and about 1 in. over long. To fix it, the slips should be glued on the under edge and inner side, and the velvet put on; then they may be fixed together with the fine pins or nails. The velvet must be glued on the cardboard bottom the net size, and it may be fixed on with $\frac{3}{8}$ -in. fine wire nails. The outer sides of the slips may then be glued and the velvet drawn over, neatly fitting it at the corners and clipping off the surplus, except the over-width, which must be glued under the bottom. It should fit in place fairly tight, unless it is intended for lifting out. In that case it should be slightly loose, and would require a silk-ribbon loop at the centre of each end by which to raise it; the loop may be fixed by gluing on the bottom. To give a finished appearance to the bottom, it may be covered with velvet or paper.

With the other tray, the short sides are $\frac{1}{4}$ in. thick, with the top edge bevelled on the inner side to $\frac{1}{8}$ in. (see Fig. 28). The long sides are $\frac{1}{8}$ in. thick, and the bottom of cardboard. The method of making the tray is the same as for the bottom one, the division piece being put in and fixed just before the outer sides are glued for drawing over the velvet. For the lid a piece of cardboard is cut, allowing for the velvet to turn over the edges, to be glued on the back about $\frac{1}{2}$ in., and it is glued in place. The trays should be allowed plenty of time in a dry place for the glue to dry thoroughly and the box may have the fittings put on and the polishing finished.

To make the mirror, first a piece of cardboard should be obtained and cut to a true oblong 12 in. by $5\frac{1}{2}$ in., to make a pattern. On this, a pencil line is made lengthwise and one across, dividing the space into four equal parts. A true oval (ellipse, strictly speaking) is then struck out on one half of the cardboard, the diameters being $5\frac{1}{2}$ in. by $4\frac{1}{2}$ in. To do this, an oblong that size should be first marked out, with lines across dividing it into four smaller ones to find the centres. The best way to describe the ellipse is by means of three pins, a piece of string and a pencil (see Fig. 29). To ascertain the exact points for the two pins shown, take half of the length-wise diameter line, which will be $2\frac{1}{4}$ in., and two lines that length may be ruled from the end of the short diameter line as shown. At that point a third pin may be inserted for the purpose of tying the piece of string so as to bring it to the right tension. Another oval is made $\frac{1}{2}$ in. outside, which is to be the outline of the frame; and the handle may be drawn freehand or with the compasses. The other lines shown mark the waste (indicated by cross marks), which may be cut away. With a sharp-pointed knife, the inner oval should be cut out clean and true, the waste piece to be given as a template in ordering the bevelled silvered plate to be made to it.

The other part is the pattern for the woodwork, but is not yet out to the

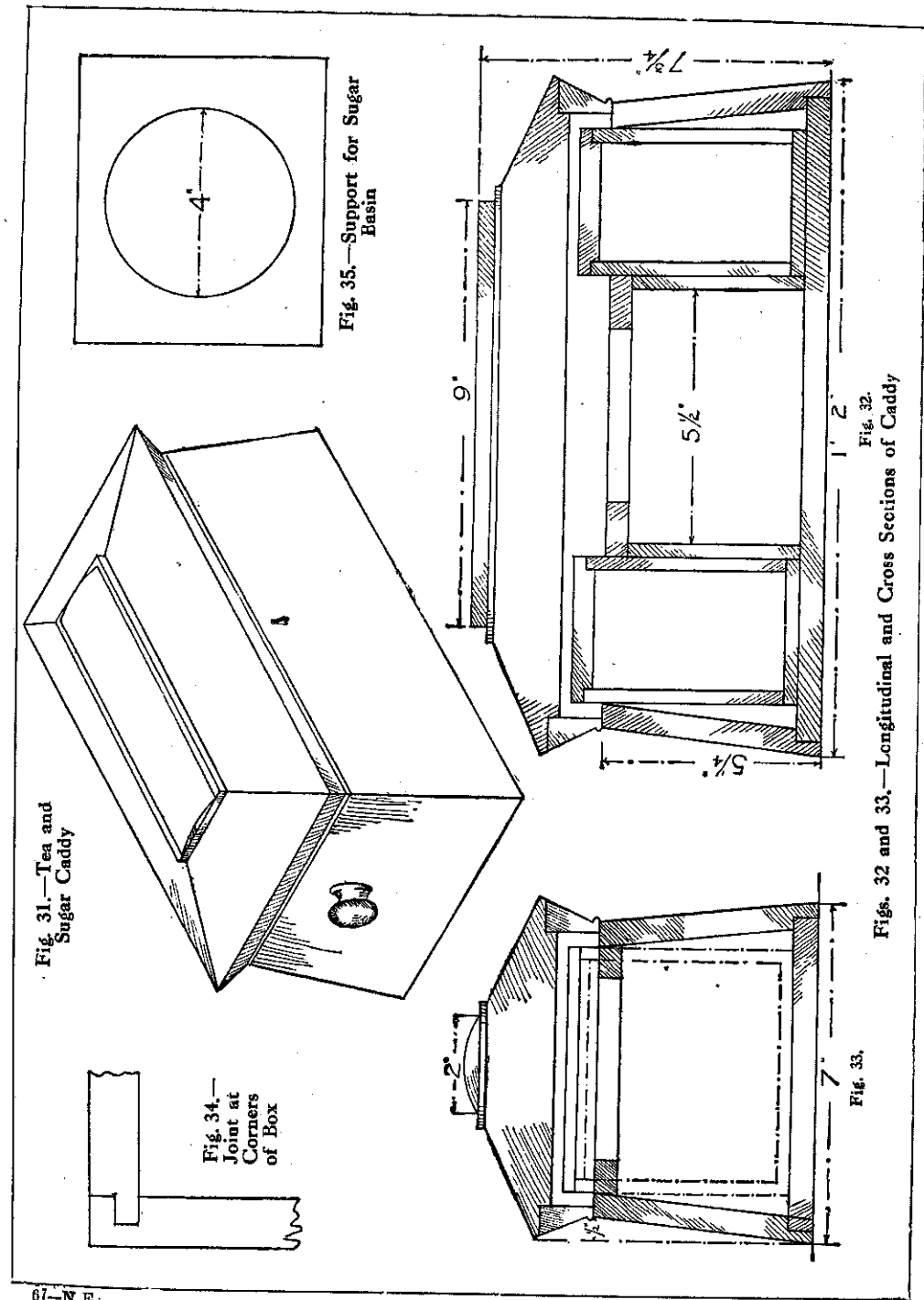


Fig. 31.—Tea and Sugar Caddy

Fig. 34.—Joint at Corners of Box

Fig. 35.—Support for Sugar Basin

Fig. 32 and 33.—Longitudinal and Cross Sections of Caddy

Fig. 33.

true outline. Three pieces of wood are now required to be cut to the roughed-out outline of the pattern. Two of them must be of mahogany fully $\frac{3}{16}$ in. in thickness, and one of sycamore $\frac{1}{8}$ in. thick, all to be planed straight and even to lie together as close as possible. The sycamore may then have the oval cut out with a fret-saw, neatly to take the glass. It is then glued to one of the pieces of mahogany, and it is advisable to cramp it well to a level piece of board.

The other piece of mahogany must have the oval cut out $\frac{1}{8}$ in. inside the line, as it has to be glued on the front of the sycamore when the glass is in place to cover the edge of the bevel all round. When it is cut, it must be trimmed and neatly rounded with the spokeshave and glasspaper, and the rounded edge should be rubbed with a linseed-oil rag, and polished, as it is much easier to do now than when in place on the front of the glass.

The cardboard pattern for the glass should be taken and $\frac{1}{4}$ -in. strip cut off all round the edge in one piece. This is to be placed in behind the glass to form an air space and keep it from the wood, to prevent any chance of rubbing. The mahogany front may then be tried in place to see that it fits quite well, and is glued and cramped as before.

Several days in a dry place should be allowed to set, and the cardboard pattern may be cut to the correct outline from which to mark, the wood being then cut out with the fret-saw and nicely rounded with the spokeshave to the section shown by Fig. 30. When smoothed up with No. 2 and No. 1 glasspaper it is ready for polishing.

TEA AND SUGAR CADDY

The caddy shown by Figs. 31 to 33 should be made either of oak, mahogany, or black walnut.

The box is made of $\frac{1}{2}$ -in. material, with the sides sloping inwards, as shown in Fig. 32. The corner joints are tongued and grooved as in Fig. 34. The sides are rebated to take the bottom board,

which is fitted between. Before the box is glued together, two small stop grooves are cut in the front and in the back pieces. These grooves are for the two $\frac{1}{4}$ -in. partitions, between which the tea boxes slide (see Fig. 32). Allowance of $\frac{3}{8}$ in. is made on the top of these partitions for the piece into which the sugar basin fits (see Fig. 35). The corners of the box should be glued and cramped, then the partitions slid in from underneath. The bottom should then be glued and bradded.

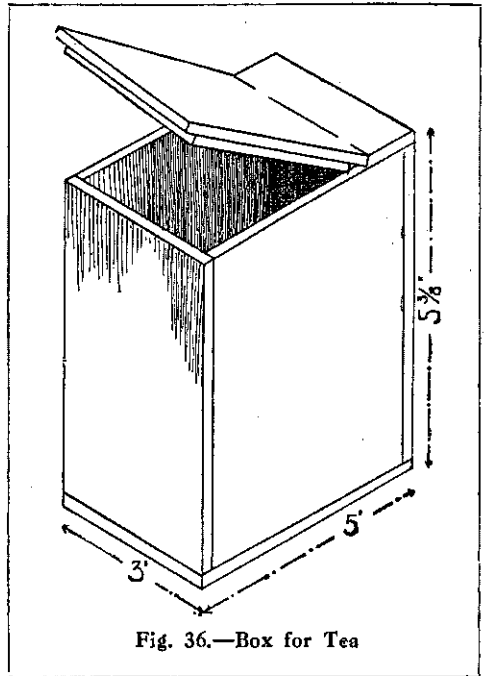


Fig. 36.—Box for Tea

When the glue is dry the sides should be smoothed and glasspapered.

A cross section of the lid is shown in Fig. 33. The mounted top is made with the rebate plane, the rounded piece being glued upon the top. The lid is also bevelled and rebated underneath to take the framed fillet that fits over the inner boxes. This framed fillet is first mitred, then beaded and bevelled with the bead and rebate planes; it is then glued and bradded. The lid is fixed with brass butt hinges.