



# Make a... **Display cabinet**

**Marc Fish solves several technical problems in the course of making this veneered Macassar ebony display cabinet. Here he outlines the project and over the following pages describes the techniques by which he works through the obstacles**

This cabinet was commissioned by a very good client of mine. She has kept me in work for over a year and we have become good friends. It is this sort of client that one dreams of having and I wish they could all be like her. She doesn't mind paying for quality and allows me a pretty free rein on the design.

She had decided on a display cabinet for a Japanese doll that was a gift some years earlier. The cabinet was for her dining room and would be displayed alongside the curved Macassar ebony cabinets I had already made for her, see *F&C150*. The brief was quite simple – same timber choice, a place to display the doll, curved glass front, remote-controlled lighting.

I decided it needed a hint of Japanese architecture and it was to incorporate my trademark of long slender legs and of course a surprise for the client – in this case a sterling silver engraved plaque with '2008' in Japanese calligraphy.

The legs of the cabinet were to appear to follow through to the top and extrude as finials.

This is not easy to construct so they were made in sections and joined at various stages. The cabinet has a curved glass front, flat glass sides and a veneered back panel. The base on which the doll sits was to have a void below to allow storage space for the lights and the transformer, see page 20.

## Problems

This project was never going to be straightforward and posed problems to solve. These involve turning the legs, installing the lighting, joining between the four corner ferrules and the horizontal bases, veneering the shelf tops and tackling the glazing, the last three of which are described separately on the pages which follow, see *Necessary Techniques*

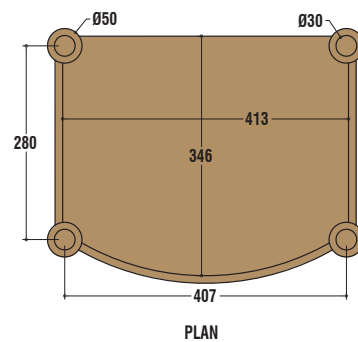
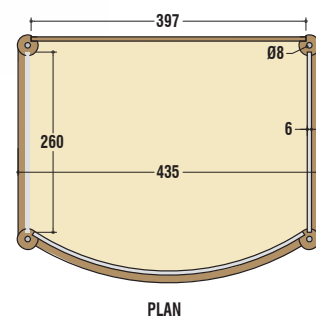
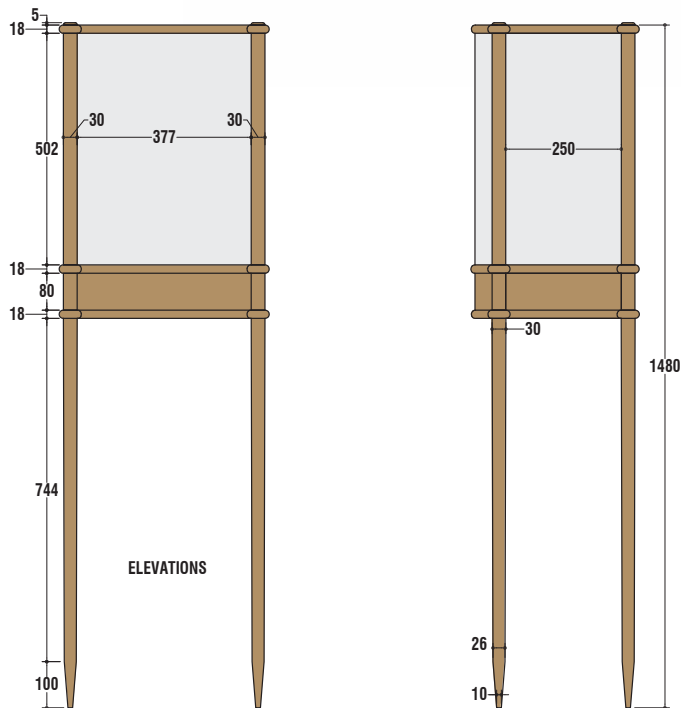
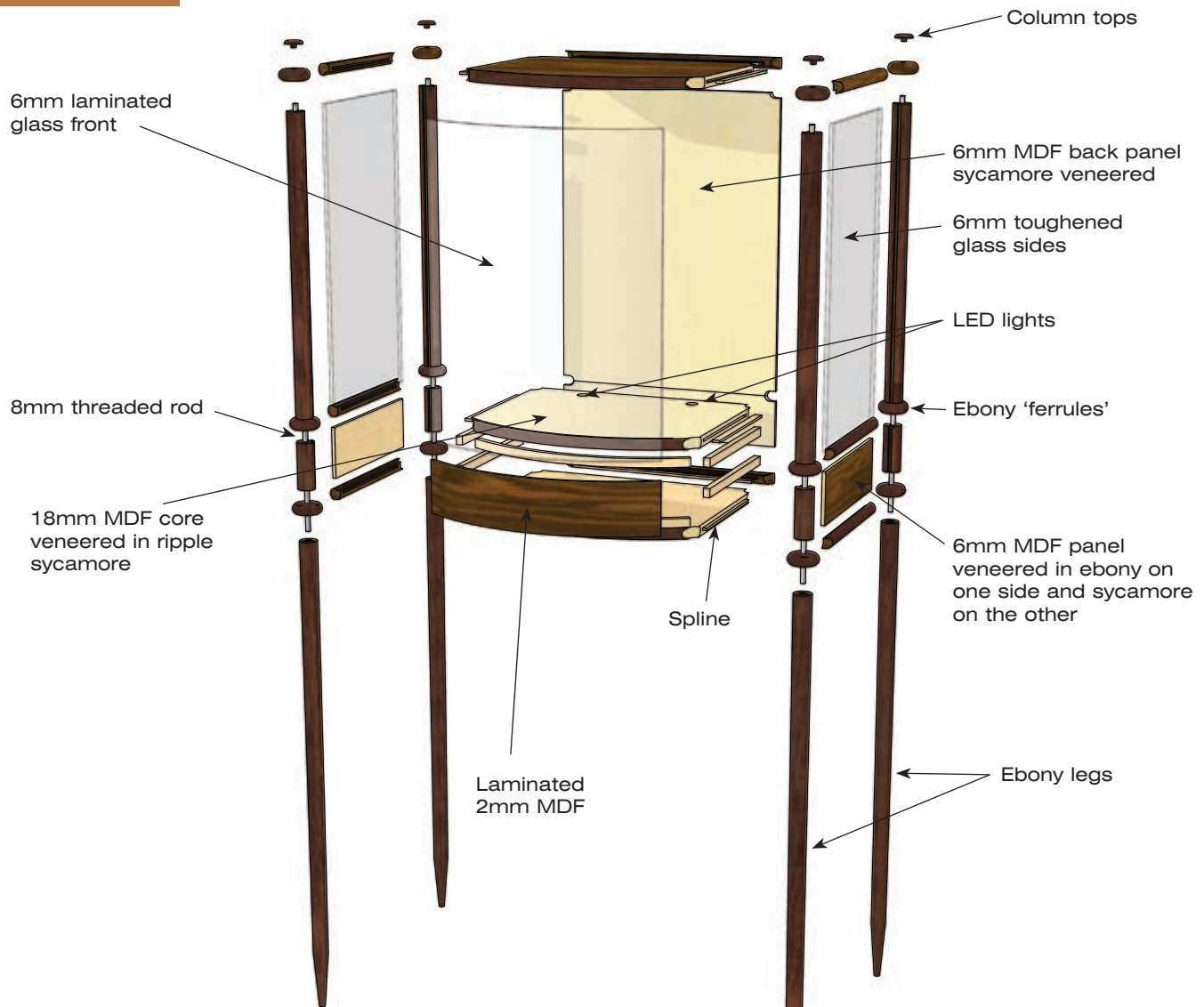
## Suppliers

Veneer from Nantwich Veneers Ltd,  
Nantwich  
Tel 01270 625361  
Web [www.nantwichveneers.com](http://www.nantwichveneers.com)

Woodturning by C & M  
Woodturning, Newhaven, East  
Sussex  
Tel 01273 517123

LEDs from Collingwood Lighting,  
Northampton  
Tel 01604 495151  
Web [www.Collingwoodlighting.co.uk](http://www.Collingwoodlighting.co.uk)

In detail







Rear panel fitting

guide on page 14, and these are briefly referred to below.

I knew I could not turn all four legs down to exactly 30mm but it was crucial that the dimension was exact as everything else related to it, so there was no choice for me: it was a job for professional turners.

It is fine to sub-contract work if it is not your speciality and the cost of destroying just one of the Macassar ebony (*Diospyros celebica*) legs was not worth the risk. Chris made one template and then copied all four legs from it.

The final dimension varied by 0.2mm, so that was pretty good. His team squared off each section and inserted threaded nuts to take the 8mm rod.

The horizontal base and top were made from veneered 18mm MDF with a solid roundover lipping. The front, to enable me to get it to curve, was made from several thin sequential laminates which were glued over a former before the groove for the loose tongue was cut.

The join between the four corner ferrules and the horizontal bases was the hardest part of the cabinet.

I wanted a perfect curved joint and this kind of joint is impossible to cut accurately by hand, so I devised a sequence of work which is described on the following pages.

Uprights to house the glass needed to be routed with a groove and the easiest way to do this was to build a box to take the round profile.



Half-assembled cabinet with wiring in place

The platforms were veneered in rippled sycamore (*Acer pseudoplatanus*) for the inside and Macassar ebony for the outside, and the area that houses the lighting components was made from veneered MDF, with 6mm used for the sides and back.

### Back panel

To allow access to the doll the back panel is removable; it is secured with curved battens and countersunk brass screws; the battens are the same radius as the curved uprights and are therefore discrete.

Inserting brass screws without them snapping can sometimes be frustrating. I have found the best way is to drill a pilot hole then fit a steel screw of the same size first. Even doing this, sometimes the steel screws can snap, particularly the smaller sizes. On very hard wood like ebony, rosewood etc the pilot hole should be only fractionally smaller than the screw.

Finally, when inserting a screw rub a little candle wax on the thread – you will be amazed how much easier the job is.

### Finishing

All the components were sanded to 360 grit then five coats of Osmo Polyx-oil were applied. This product seems to be the new one-finish-fits-all – it certainly is in my workshop and most of my bench-space users have swapped over to it, but it is not without its disadvantages as it has a



*The completed cabinet side*

drying time of at least eight hours and can become a sticky mess if it is applied too thickly, so I apply it very thin and keep rubbing until it is almost dry to the touch. The five coats were built up over five days and

allowed to dry overnight. Two coats of dark wax were applied using 0000 wire wool and then buffed to a shine.

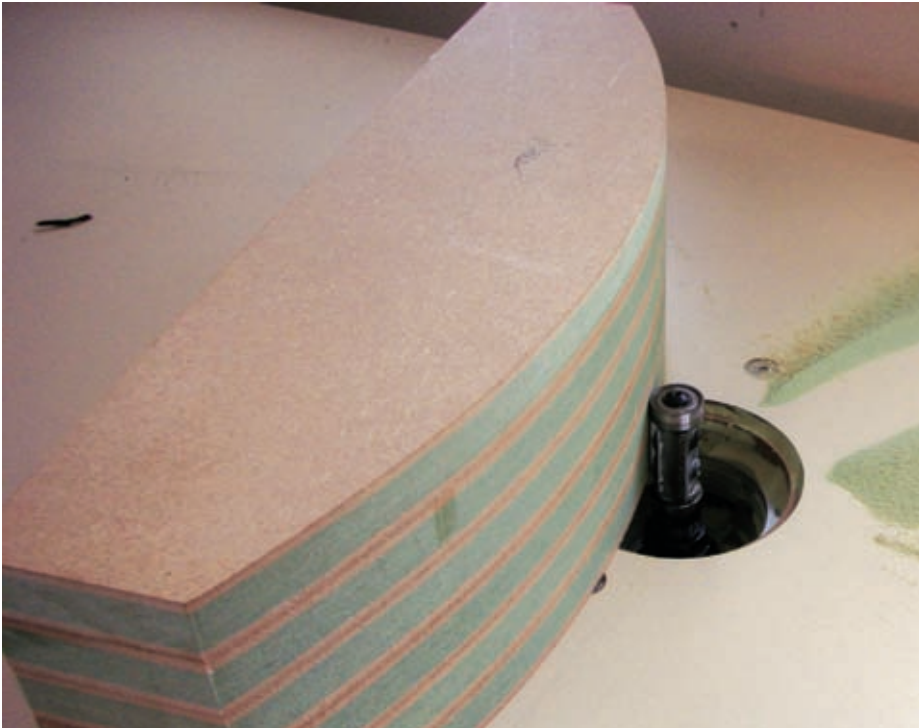
This piece has gone into a room with items that have been French polished and has matched very well.

*The top and its plaque*





## Installing LEDs



*Making the former for the bowed front*

The glass is 6mm, toughened for the sides and laminated for the front curved piece. The components for the lights are low voltage LEDs and the transformer is housed in the void between the base and bottom. Ventilation is not required in an enclosure of that size because the lights give off no heat.

LEDs cost around £30 each with £80 for the transformer.

These were on remote control and this cost another £30 to link up with the client's existing remote control system. LEDs are supposed not to need replacing.

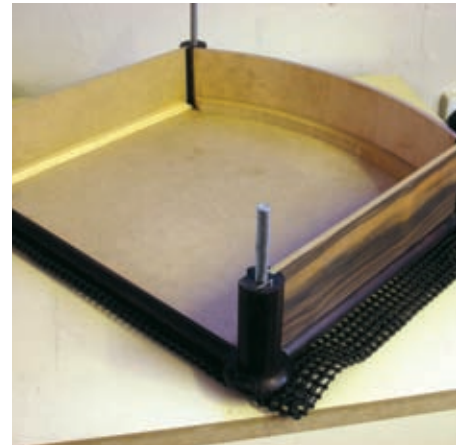
The area that houses the lighting components was made from veneered MDF: 6mm was used for the sides and back and the curved front was laminated from 3 x 2mm material.

I have recently changed over to using MDF rather than flexi-ply for laminating as it has no grain pattern that can telegraph through the veneer. Once glued up, the MDF laminates provide a stiffer component which is less susceptible to moisture changes.

The former for the curved laminates was made from sections of MDF. I made

one on the bandsaw and then used a bearing-guided cutter on the router table to copy the subsequent layers.

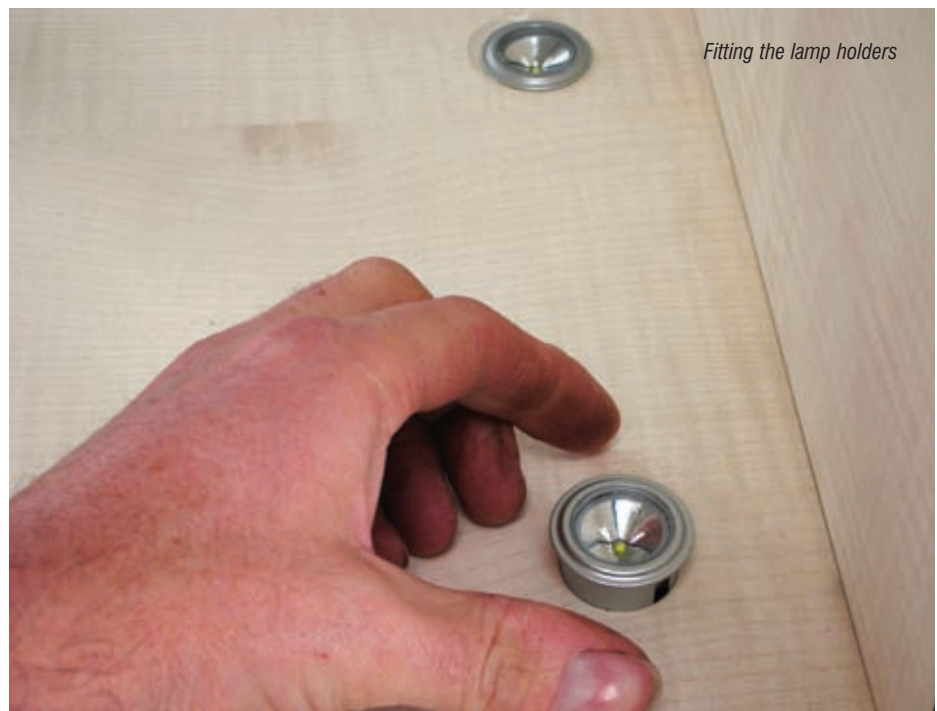
A vacuum bag was used to glue the laminates and the veneer.



*The central box which contains all the electrics*



*Detail showing how the cable passes through the rear panel*



*Fitting the lamp holders*

**Necessary techniques** Corner ferrules/horizontal bases, page 16 • Glazing, page 18 • Veneering, page 20

# How to... Join ferrules and horizontal bases

Marc works out how to cut the perfect curved joint



Discs can be turned, with care, on an engineering lathe

The join between the four corner ferrules and the horizontal bases was the hardest part of the cabinet. I wanted a perfect curved joint and this kind of joint is impossible to cut accurately by hand so I devised this sequence:

- I turned 50mm discs in Macassar ebony on an engineering lathe
- Then I cut the 20mm-diameter roundover by attaching a router cutter with that profile to the engineering lathe and fed it in to the discs, *see Cutter warning*. The art here is to achieve the profile on the disc without changing its diameter in the centre of the profile
- The discs must now be matched to their sockets. All the lipping was fitted prior to cutting out the sockets. A loose tongue was used to join the solid lipping; a groove was cut in the MDF and the lipping, using a bearing-guided biscuit cutter on the router table. The bearing was not quite the right size and I have in the past increased the size of bearings by wrapping them in insulation tape; you can get a very accurate size using this technique but the tape does not last for ever
- I used a router with a template to remove most of the waste and then applied the matching router cutter with a 20mm-diameter profile and circle-cutting template. The fit was perfect
- To glue these in place I reinforced them with 8mm threaded rod and epoxy glue

## Cutter warning



Router cutters are not meant to be used in engineering lathes. You must be fully conversant with tool mounting and use of the lathe to utilise this method. You should also wear full face protection.

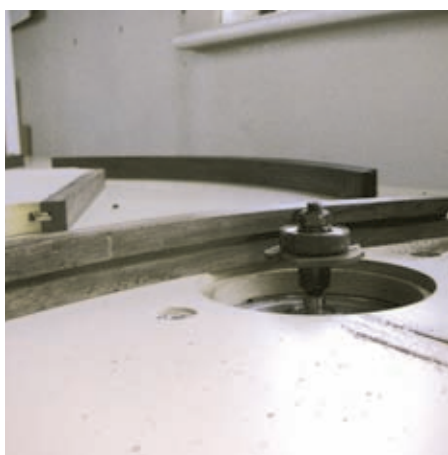
Michael Huntley



## F&C TECHNIQUE: Joining ferrules & horizontal bases



1.1 Routing the slots for the loose tongue in the MDF carcass floors



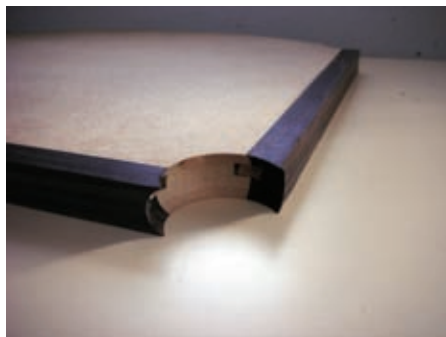
1.2 Routing the slot in the solid lipping; note that the lipped piece can be seen in the background



1.3 Use of an acrylic circle-cutting template ensures most of the waste is removed



1.4 Clamping up the lippings



1.5 The shaped socket for the ferrule 'buttons'



1.6 The ebony ferrules



1.7 A ferrule and its housing



1.8 The setup for clamping the ferrules in place



1.9 The column tops are fitted last of all



**2.1** Using a fluting box to hold the upright while the slot for glass is routed

# How to... Groove for glazing

**The success of this technique lies in careful measuring**

The uprights to house the glass needed to be routed with a groove. The easiest way to do this is to build a box to house the round profile.

I made this out of MDF and used a router with a 30mm guidebush; this ran perfectly inside the box walls as the uprights were also 30mm. Careful measuring and test cuts are the only way this kind of technique works.

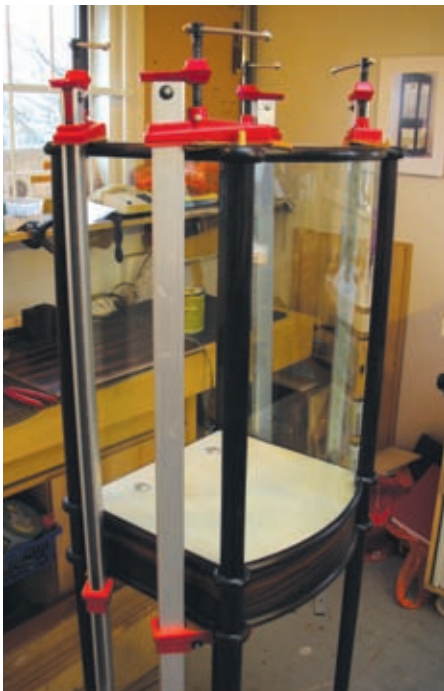
The horizontal platforms are routed against a straightedge for the flat glass groove, with a template and guidebush for the curved one.

Do not assume the radius will be consistent – I made two different templates for the top and bottom. I traced the glass curve onto MDF then cut out this on the bandsaw, and after some tidying I marked and re-cut a parallel curve to allow for the router guidebush.

After a little clean up I was able to rout the grooves into which the curved glass would fit.



**2.2** The corner joint: the channel for the glass is a 4mm continuation recess below the rebate, see drawing



**2.3** The glass glue-up

