

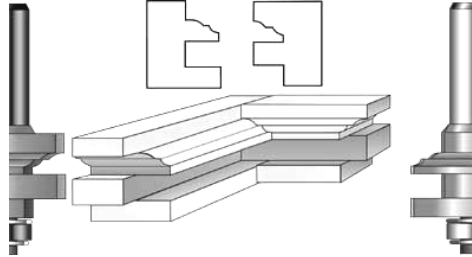
Making a Raised Panel Door

(Step by step)

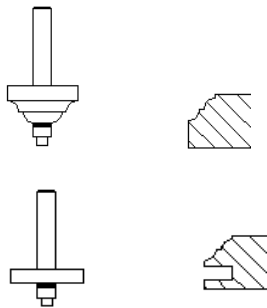
H. Martínez F.

A raised panel door can be done in more than one way depend on tools and cutters we have available.

a) assembly with stile and rail router bit set



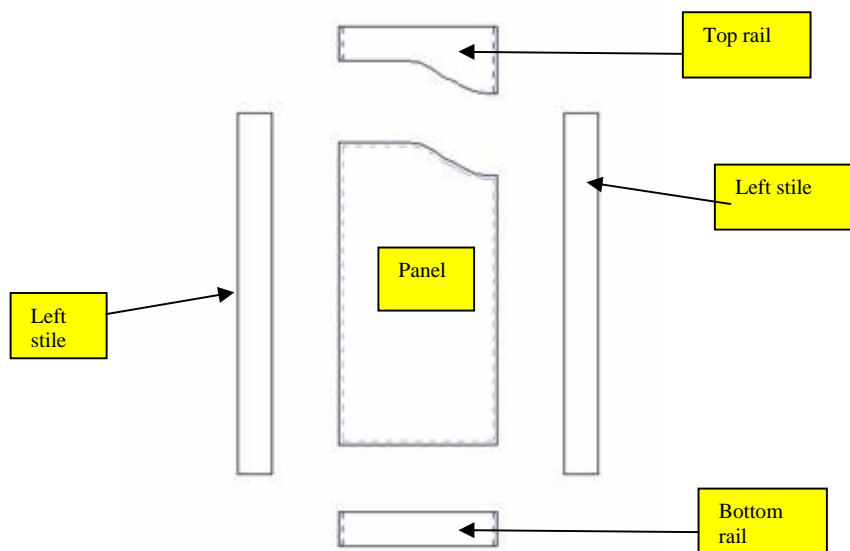
b) Using a "Roman ogee" and a slot cutter router bits. Assembly with biscuits.



This last method will be described here.



Components (shown before molding)

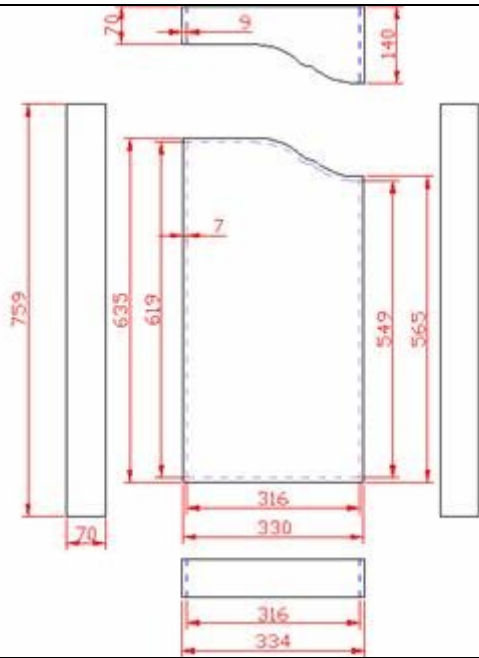


Detailed parts:

We will assume a door for a cabinet with this dimensions: 759mm x 456mm or $29\text{-}7/8'' \times 17\text{-}7/8''$

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- **2 Stiles:** 759mm x 70mm ($29\text{-}7/8'' \times 2\text{-}3/4''$)
- **1 Top rail:** 334mm x 140mm ($13\text{-}5/32'' \times 5\text{-}1/2''$)
- **1 Bottom rail:** 334mm x 70mm ($13\text{-}5/32'' \times 2\text{-}3/4''$)
- **1 Panel:** 635mm x 332mm ($25'' \times 13\text{-}5/64''$)



Doing the components math

Constants value:

- Thickness : 19mm ($3/4''$) for frame
16mm ($5/8''$) for panel
- Width of frame
 - stiles and bottom rail: $2\text{-}3/4''$
 - top rail : $5\text{-}1/2''$ (depend on the kind of arch we will use)

Variables:

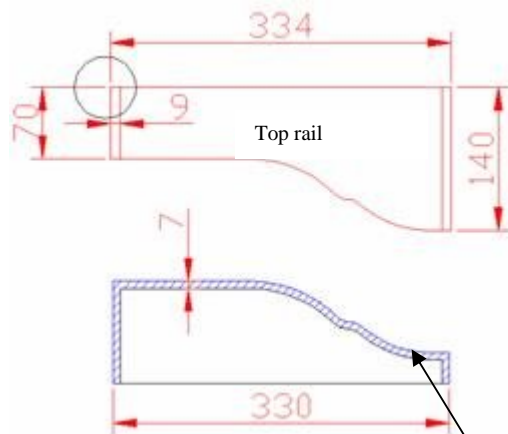
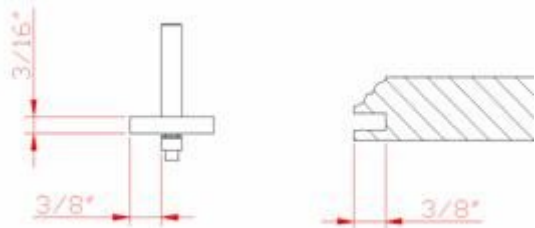
- Height (H) and with (W) of door
In this case: $H = 759\text{mm}$; $W = 456\text{mm}$
- **Stiles** length (L_S) is the same of door's height
 $L_S = H = 759\text{mm} = 29\text{-}7/8''$
- **Rails** length (L_R): we take this measure from door width minus both stiles width – it would be the measure without any mold-, but we will mold with a *fillet roman ogee*, so we have to increase $3/8''$ in both sides.
 $L_R = W - 2 * 2\text{ }3/4'' + 2 * 3/8'' = W - 2 * 70 + 2 * 9\text{mm}$
 $L_R = W - 4\text{ }3/4'' = W - 122\text{mm}$
 $L_R = 17\text{ }7/8'' - 4\text{ }3/4'' = 13\text{ }1/8''$; or
 $L_R = 456\text{mm} - 122\text{mm} = 334\text{mm}$

- **Panel:** Panel length (P_L), Panel width (P_W)

The panel dimensions are taken from door dimensions minus frame width, and we have to add the "hidden area" in all contours, this area will be insert in the slot made in all frame. The value added in each side must be a little smaller than the slot length (less than $3/8''$ i.e. $5/16''$) for wood contractions and expansions

$$P_L = H - (2 * 2\text{ }3/4'') + 2 * 5/16'' = 25'' = 635\text{mm}$$

$$P_W = W - (2 * 2\text{ }3/4'') + 2 * 5/16'' = 13'' = 330\text{mm}$$

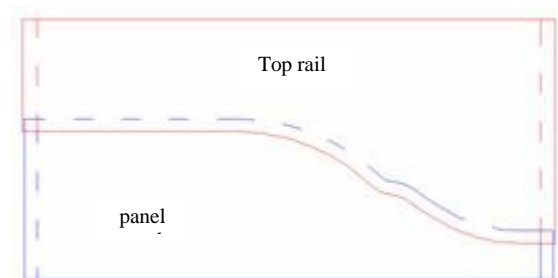
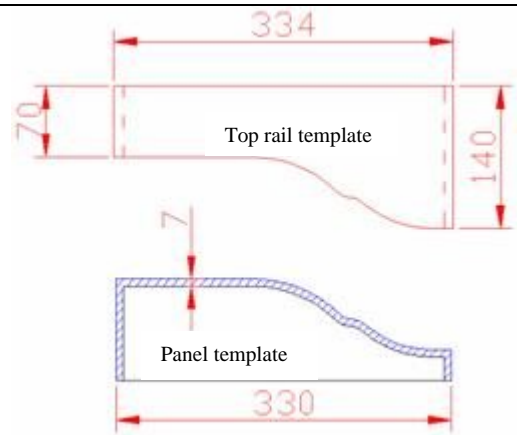


Hidden area

Templates:

Arched parts need templates

- For Top rail we must build a template considering the real dimensions
- For panel we need just the shaped area, it have to be a complement of top rail shape



Now we are ready to process each component, previously we need each part listed before to be squared

Step 1:

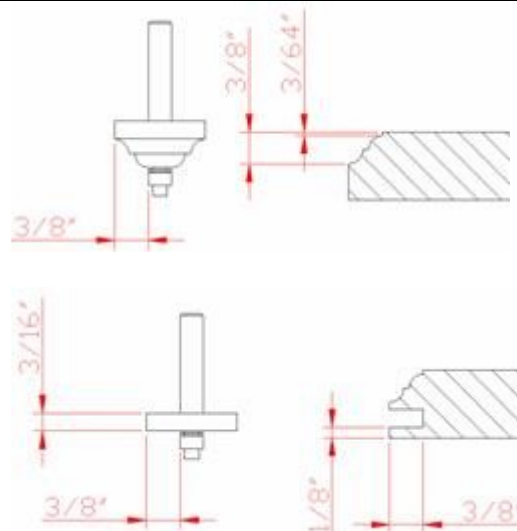
Cut arched parts.

- Top rail: transfer the shape of template on top rail and cut in bandsaw, then sand the rough area or clean with a flush trim bit
- Panel: make the same as top rail

Step 2: Routing

This step must be done in a router table. The kind of cutters is shown in the right picture.

- Routing first with a fillet roman ogee cutter. Rout the internal part of stiles, bottom rail, and top rail. Calibrate as picture shown.
- Make the slots :
Cut slots in the same place of molded parts, but we have to consider the position of cut
Slot width = $3/16'' = 5\text{mm}$



Step 3: Cutting intersection parts

Stiles: first we have to make a beveled cut (45° crosscut) -depth of cut must be the same as mold width (3/8")-; then make a rip cut in a table saw, you must stop the cut approximately 1/2" before to get the previous crosscut. Take out the rest of wood with a chisel.

For beveled cut we have to trace the position of cut. We obtain this position from the corresponding rail width as the maximum point of cut

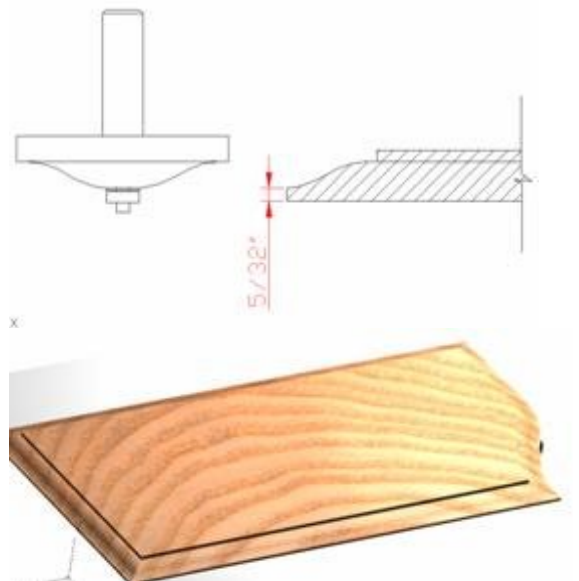
Rails: Just make a 45° chamfer in each extreme, obviously in the profiled part



Step 4: Molding the raised panel

For a panel of 5/8" (16mm) we must choose a cutter not too deep .

Calibrate until the thinner cut must be 5/32" (4mm) -1/32" less than slot width -



Step 5: Joining

For assembly we will use biscuits and glue

- Calibrate the biscuit jointer in the middle of frame thickness and put the depth of slots for biscuits N° 0
- Make slots in each intersection between rails and stiles. In wider part of top rail make double slot
- Supply glue in each biscuit slot, and then put biscuits in rails.



- Make a previous assembly with the two rails and one stile, after that insert the raised panel. Finally put the other stile and clamp all the frame until the glue will be dried.

