

Bombe Chest Project

Material

- Case work, drawer fronts, back and bottom panels - ~ 90bf genuine Mahogany (Irion Lumber Co - <https://irionlumber.com/>)
- Drawer sides, backs – Hard Maple (MacBeath Hardwoods - <https://www.macbeath.com/>)
- Drawer bottoms – Birch (The Home Depot - <https://www.homedepot.com/>)
- Hardware – Hand Antiqued Chippendale Griffin Bail Pulls (House of Antique Hardware - <https://www.houseofantiquehardware.com/>)

Finish

- Sealer - Emteck UltraSeal WB shellac
- Top Coat - Emteck 2000 Semi-gloss WB varnish (Target Coatings - <https://www.targetcoatings.com/>)

Hours - 250 to 300



Starting Off

Plans for the project were difficult to find. However, scaling off photographs of museum pieces as well as a rough sketch from a 1980 Fine Woodworking article (Attachment 2), a detailed set a plans was developed for the project. The overall design of the chest is similar to these examples except for the harlequin inlay banding at the top of the chest and substitution of cabriole feet instead of the traditional ball and claw configuration.

A PDF copy of the plans are included in the plans section of the website. In addition, the electronic version of the plans for this project are available in AutoSketch.

Project Timeline

The project started in the summer of 2019 and completed in March of 2020. Construction estimated at between 250 and 300 hours.

Rough Lumber



I was fortunate enough to secure some very nice Mahogany slabs from Irion Lumber in Pennsylvania. The large (12' long) 12/4 slab allowed for the fabrication all of major case components (case sides, drawer dividers and drawer fronts) from a single piece of material – insuring color and grain consistency.

Construction and Select Project Details

Traditional methods were used to construct the case, internal case elements (drawer runners, ledgers, and kickers) as well as the drawers themselves. This included mortise and tenon joinery, sliding dovetails (used to attach drawer dividers to the case) and hand cut dovetail joinery for the drawers. Full size templates were fabricated and used extensively to construct the major components (case sides, case top, serpentine drawer dividers and drawer fronts).

The case sides were fabricated from the 12/4 material by first roughing out the concave (i.e., outer) surface of the case using a stacked dado head cutter on the table saw and taking passes of varying depth to rough shape the overall case curvature. The outer case sides were then finished using a template/jig and router sled.

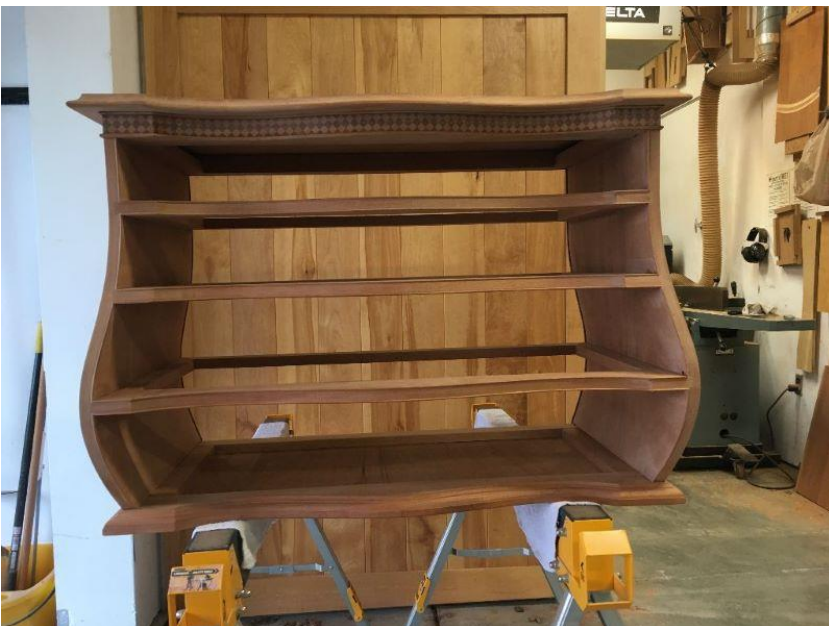


A large 1" straight bit was used to first rough out the shape and then switched to a smaller 1/2" bit to finish off shaping the outer case sides.

Once the outer case sides were completed, the process was repeated on the convex (i.e., inner) surface of the case. An inverted (or *reverse*) template was used to shape the inside of the case.

The serpentine drawer dividers were fabricated using individual full-size templates and router with a pattern cutting bit. Front drawer dividers were set into the case with sliding dovetails.

One of the more challenging aspects of the chest was the case front edge *and* drawer divider beading. It was partially done with a router and beading bit, but much of this element had to be done by hand. It goes without saying fabricating a project with so many curves and opposing shapes involves extensive hand work. In addition, the milling sequence for the sliding dovetails to accommodate the case beading detail was a bit tricky. Due to cross-grain considerations, sliding dovetails and a cleat were used for the beading on the top and bottom of the harlequin banding and the case bottom molding, respectively.



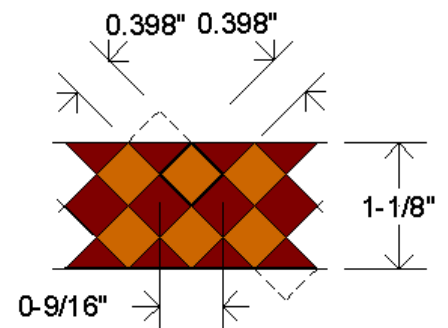


1. Harlequin Inlay Banding

Some of the more elaborate Bombe's include a carved feature along the top edge of the case. I opted instead for an inlaid harlequin banding. Blanks for the harlequin inlay were made by sandwiching together layers of Mahogany and Jarrah and then slicing the blanks into smaller individual blank sections.



The dimensions of the *sandwiched* blanks and individual blank sections were critical in order insure the proper 1-1/8" final width of the banding. The individual sections of Mahogany and Jarrah had to be just under 0.4" thick (0.398" to be precise) and the individual blank sections also had to be crosscut to that same dimension to insure each material type is perfectly square (as viewed from the end). This results in the diagonal dimension of the individual squares being 9/16" across and when the assembled blank is cut to the final width (as further described below) creates a band with a *full* square thru the middle and alternating *half* squares on the top and bottom of the inlay.



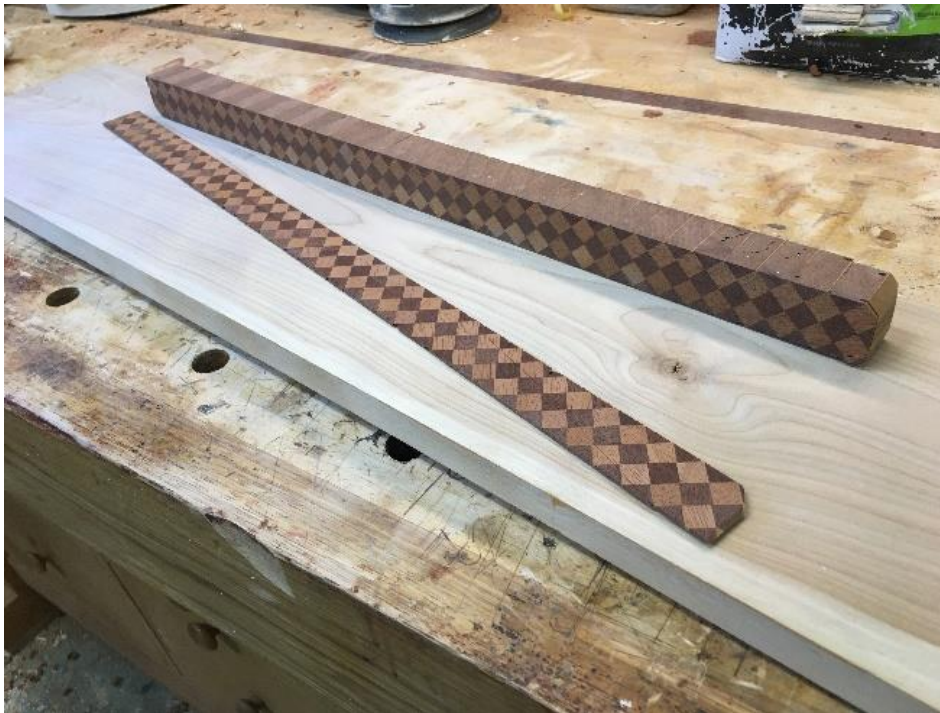


The individual blank sections were glued at a 45-degree angle to create the harlequin pattern. A basic "piston ram" was constructed to align the blanks for glue-up. At one end was a 45° end stop secured with a bench dog. At the other end the bench end vise was used to ram/compress the entire assembly together using another 45° end stop (which slides between the runners of the ram). The blue tape was simply to minimize glue sticking to the sidewalls of the ram assembly.

Only about ten or so of the individual blank sections were assembled at a time. Then these sub-assemblies were glued to create the final longer length harlequin blank.

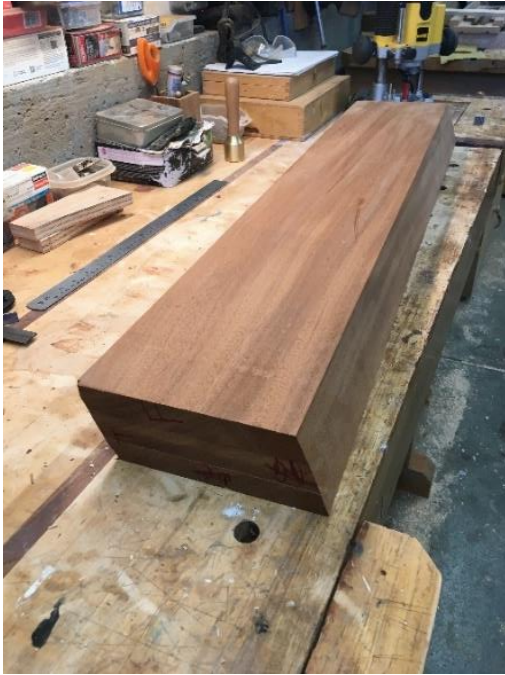
Once the glue had set, the sawtooth edges were cut off and the blank ripped to its final working dimension (I left the width of the block just slightly proud of the final 1-1/8" width to allow for trimming and final fit-up).

A thin inlay (~1/32" th.) was sliced from the harlequin blank and set/glued into the top edge of the case.



2. Drawer Fronts and Sides

Drawers start off as 3" thick trapezoid shaped blanks; all cut (top to btm) from the same 12/4 slab of Mahogany.

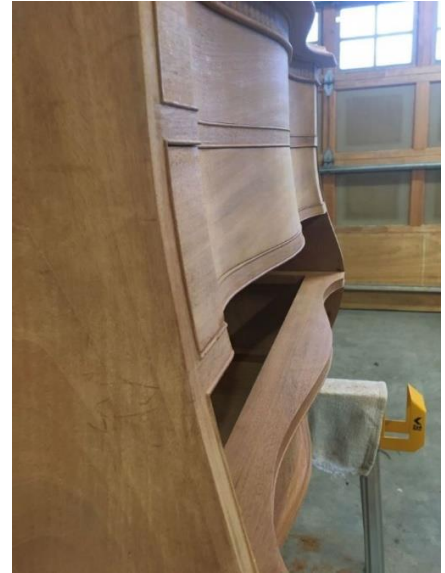


Several techniques were utilized to shape the drawer fronts, but the most effective was to rough cut the serpentine shape on the bandsaw and then aggressively shape the final curvature(s) with a hand drill fitted with a sanding drum and a random orbital sander using 40 grit sandpaper. A rotary plane, chisels and bench/block planes were used for larger removals and detail work. The respective serpentine divider templates were used to ensure the top and bottom of the drawer fronts precisely matched the corresponding upper and lower front drawer dividers for each drawer front.

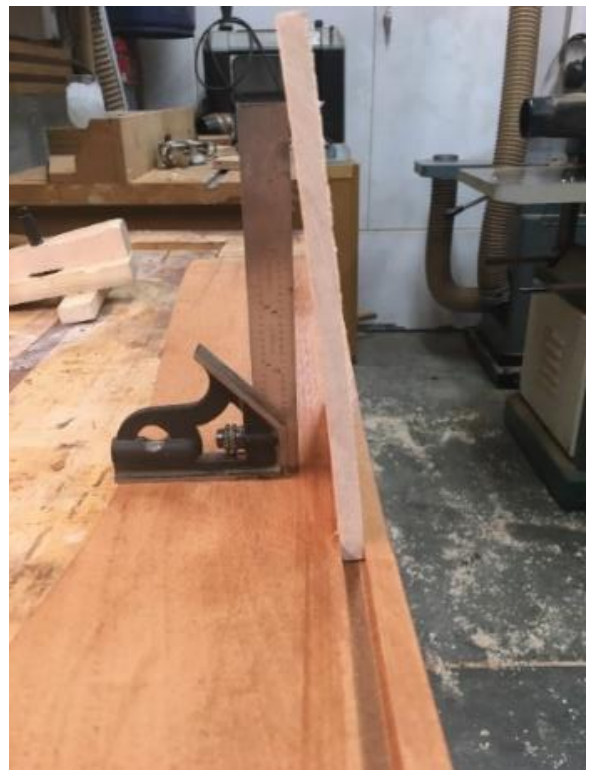


After initial shaping the drawer fronts were dry fit in the case to ensure they “lined up” with their respective upper and lower drawer dividers before the *backside* of the drawer front is cut.

There was no significant shaping on the backside of the drawer fronts - just a straight cut on the bandsaw from top to bottom at an angle that approximated the slope of the drawer front (following the serpentine curve, of course).



To route the dado in the back side of the drawer front for the bottom drawer panel a custom “angled” router plane was constructed with the blade set at an angle to account for the slope of each drawer.





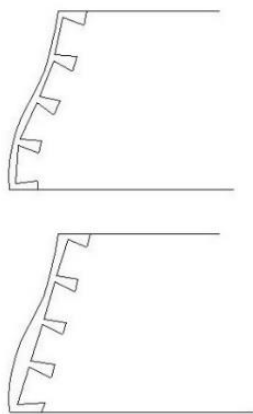
As for the drawer sides, the *outside* case template and routing sled were used, but this time to shape the drawer sides to fit the curvature of the case. The drawer side blank was affixed into the case template (at the proper location in the template for the particular drawer) and the drawer side was routed using the router sled to create the proper shape/curvature.

Since the same template was used to shape the *outside* of the case (which roughly matches the outside of the drawer side), only a small amount of refining to the drawer sides was needed to insure a good fit with the case.

Use of the case template and routing sled are only required for the bottom three drawers. The top drawer is in the “straight” sided location of the case and so traditional techniques can be used to fabricate this drawer

3. Drawer Dovetails

After first routing the **outside** curve of the drawer side using the outside case template (and leaving the inner drawer side surface for later) , the tails were marked. A “straight line” dovetail pattern was used instead of tails that followed the curvature of the drawer front (see below sketch).



The tails were roughed out on the bandsaw using a simple angled guide block against the fence (the angle of the block matching the angle of the dovetails).

After roughing out the tails the **inside** curve of the drawer side was milled using the *inside* case template. The tails were back cut (rabbeted) which resulted in a flat surface for the pin pocket and also aided in “registering” the tails to the pin board (i.e., drawer front).



Pins on the drawer fronts were subsequently marked and cut and the drawers assembled. Solid raised panels (birch) were used for the drawer bottoms and the assembled drawers were then final fit into the casing.

Leaving the back case panel off made fitting the drawers a bit easier, which (as one would expect) required additional minor hand work/shaping to ensure a proper fit. Due to the curvature of the case the back panel is split into two sections with a middle rail.



4. Rear Panel(s)

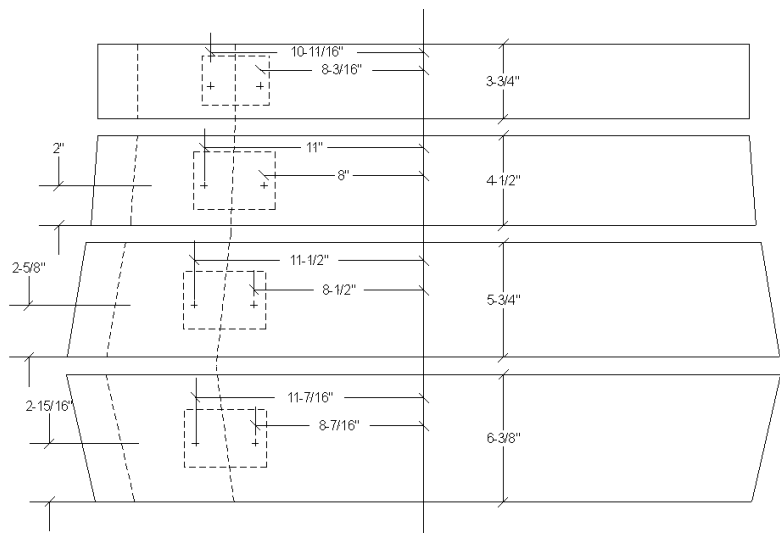
Due to the side curvature of the case, it was necessary to split the rear panel into two halves to be able to fit the panel into the case side dados when installing them. The panel(s) slide in from the bottom and once positioned in the side dados the rear rail section was slid in between them (also from the bottom).



The cabriole feet are the last major component to be installed. The feet were attached using loose tenons.

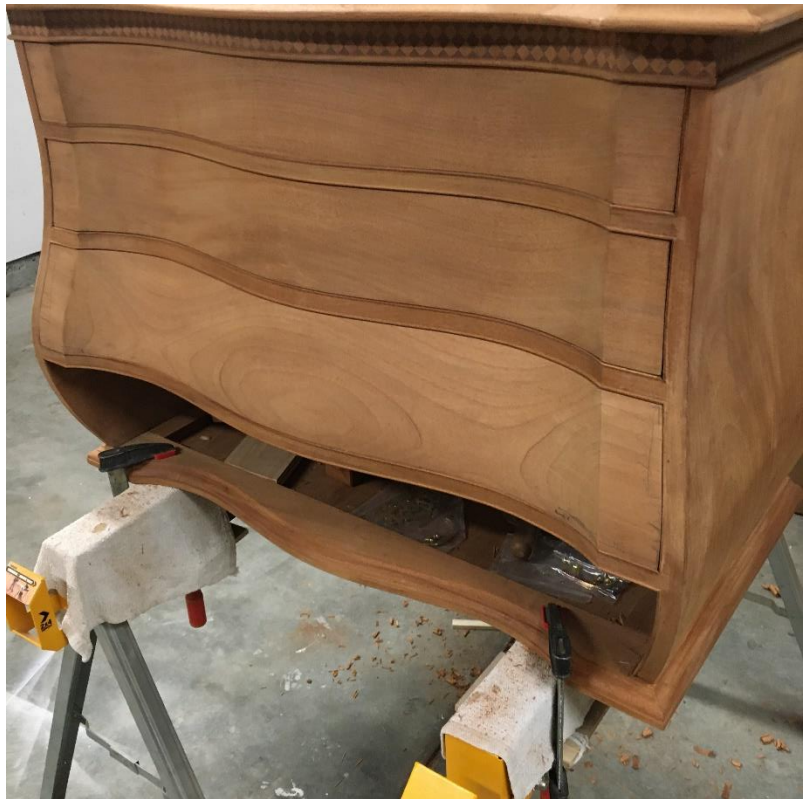
5. Finishing Touches

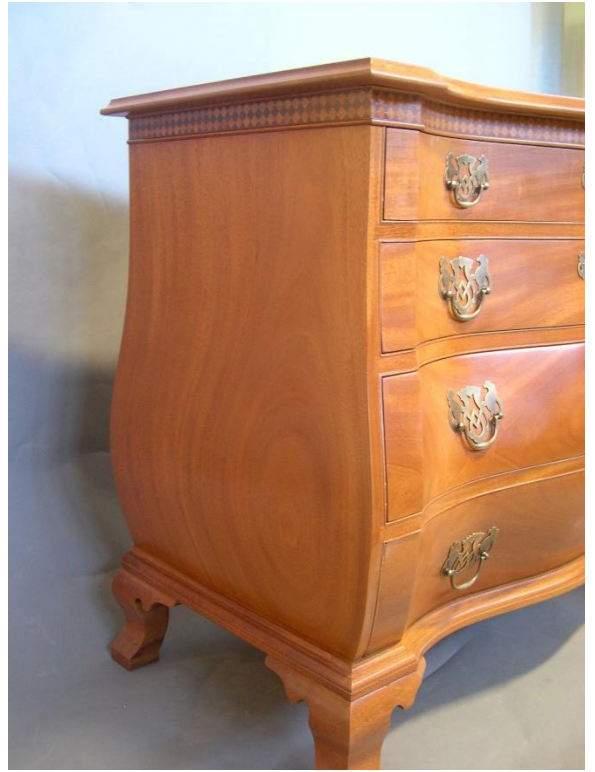
After finish sanding, two coats of WB shellac were applied to the piece followed by three coats of semi-gloss WB varnish (lightly sanding between coats). Drawer pulls were installed per the guide to the right. Due to the size difference between the drawers, a 2-1/2" bail pull was used on the smaller top drawer, while 3" bail pulls were installed on the bottom three drawers. The keyhole escutcheons are decorative and non-functional.



Bombe Chest of Drawers - Drawer Pulls Placement Guide

Attachment 1 - Project Images





Attachement 2 - Musuem Images and 1980 FWW Bombe Chest Plans



