



## **Portable Plant Box / Grilling Caddy and Stand**



### **MLCS Items Used:**

- #9405 Multi-Joint Spacing System
- #9177 Router Inlay Kit
- #9427 Diamond Inlay Pattern
- #9489 (54' roll) or #9493 (108' roll) 3/4" Wide Double Faced Tape
- #7468 1/2" Diameter Solid Carbide Spiral Upcut Bit
- or-
- #7775/#5474 1/2" Diameter Straight Bit
- #8650/#6350 1/8" Radius Round Over Bit
- #8752/#6452 1/4" Radius Beading Bit
- #5557 Finger Pull Bit

## Additional Items Used:

Router Table  
Router (Plunge Router Preferred for Making Decorative Inlay)  
Table Saw  
Jig Saw or Band Saw  
Hand Drill  
Countersink Drill Bit for #8 Screws (MLCS #9365H includes this bit)  
Bar Clamps  
Water Resistant Wood Glue  
(16) #8 Stainless Steel or Galvanized Wood Screws 1-1/2" long  
Tape Measure or Yardstick  
Square

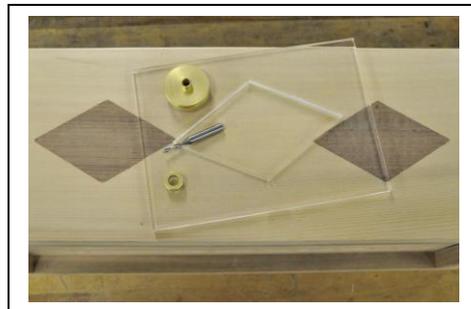
## General Information:

Because this will be used primarily outdoors, we will be using Cedar to build this project. You can also use other outdoor woods such as Redwood, Cypress, White Oak, Teak, Ipe, and African or Honduran Mahogany if you plan to keep the stand outdoors as those woods hold up well to the elements. A final finish that is intended for extended outdoor exposure should also be applied to the finish project to help it stand up to the elements and provide years of service.

## Making the Joints for the Main Box:

The sides of the box will be constructed of 7/8" thick stock ripped to a finished width of 6-1/2". The front and back will be 24" long and the sides will be 14-7/8" long. We are going to make the box using 1/2" wide box joints. You have the option of making them 1/2", 3/8" or 1/4" with the Multi-Joint Spacing System. Set up the Multi-Joint Spacing System Base for the box joint size of your choice using the instructions included with the jig. There is also a demonstration video found on our MLCS website. You can access the instructional video by using the "How To" tab on our main web page or using the search engine on the top right of our home page for item #9405 (Multi-Joint Spacing System) and you will find the videos directly under the product image.

## Adding the Decorative Inlays (Optional):



Once you have completed making the box joints, the decorative diamond inlays can be added to the front and back of the box. We chose to place the diamond horizontally on the front and back of the box. Determine which face of the front and back will be facing outward. This is the face that will get the inlay added to it. Mark the 12" center point on the face of each piece. Next draw a very light line the length of the box at the 3-1/4" center point of the width. The inlays were added to our box so that the stand legs, which will extend vertically almost to the top of the box, will not cover them and the box will also extend horizontally about 1-3/4" beyond each leg. From the 12" centerline, measure 4-3/8" in each direction and draw another very light vertical line across the width of the box. These horizontal and vertical lines will be used to place the inlay template.

Install the template guide bushing for the inlay kit into your router base and install the 1/8" spiral downcut bit into the router collet. Set the bit depth so that the bit extends approximately 3/16" from the bottom of the inlay bushing. The recess and insert will only be about 1/8" thick. Place a few small pieces of the double-faced tape on the back of the inlay template. Remove the protective backing from the tape and using the horizontal and vertical lines, align the points of the diamond over them and secure it in place on the stock. Make sure the sleeve is in place on the tip of the template guide bushing when routing the recess for the inlay. Place the router on the template with the bushing in one of the corners of the inlay template. Turn the router on and plunge the bit into the face of the stock. Slowly work the bushing around the perimeter of the inlay template. Complete the recess by removing all of the material within the recess opening. Remove the template and repeat for the three other inlay recesses.

Transfer the inlay template to the stock that you will be using for the inlay. We chose a dark wood to contrast against the light color of the Cedar. Remove the sleeve on the template guide bushing before cutting the inlay insert. When you are cutting the inlay insert, you will only be following the perimeter of the template. It is imperative that you keep the inlay bushing tight to the template to avoid removing any extra material that would create a gap between the recess and the insert.

Before the insert can be fit to the recess, you will need to either use a chisel to make the recess corners pointed or round off the corners on the insert to match the rounded corners of the recess. Apply glue to the insert and glue it into the recess. Once the glue dries, you can sand the face flush.

### Assembly of the Box:

The box joints will need to be glued to create the box shape. Use a glue brush to apply glue inside the fingers of the box joint. Working quickly, glue all four corners and secure the joints using bar clamps until the glue has set. Use a square or a measure from corner to corner to make sure the box is square and adjust as necessary before glue has a chance to set and clamps are fully tightened.

While the glue is drying, we can prepare the blank for the bottom of the box. It will need to be as wide and long as the interior of the box. It will not be glued in place, just set in place against cleats to keep it from falling out of the bottom of the box. We used two pieces to get the width needed to make our bottom wide enough. You may need to use more to get a wide enough bottom. The thickness of the bottom does not have to be

a full 7/8" thick. We planed our stock down to 1/2" thick for our bottom and used a simple edge-to-edge glue joint to secure the pieces together. Use a couple of clamps to hold the glued up bottom together until the glue dries. Once the glue has dried and the bottom has been removed from the clamps, sand it smooth on both sides. It can then be sized to fit into the box. Our bottom measures 22-3/16" x 13-1/16".

Because we are using this as a plant stand, we want to add drainage slots to the bottom. We have made six 1/2" wide slots in the bottom (see fig. A). These slots can be made using either 1/2" diameter spiral upcut bit or 1/2" diameter straight bit (see fig. B). The two outer slots are spaced 2" to the center of the slot from the edge. The remaining slots are spaced 1-1/4" apart on center with a slightly wider 2-1/8" on center between the inner two slots.

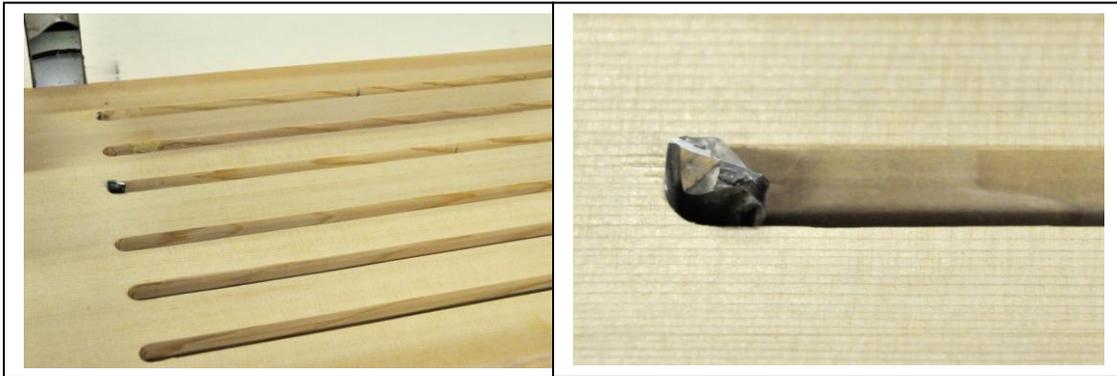


fig. A

fig. B

Once the glue has dried and the box has been removed from the clamps, a small 1/8" radius round over will get cut all around the inside and outside perimeter of the top of the box (see fig. C). This is to relieve the box of the sharp corners. This can be done with a handheld router, but will be much easier to do on the router table, since you will have only the 7/8" thickness of the box pieces to balance the router on. The router table's flat surface will keep the box 90-degrees to the bit at all times.

The bottom is held in place by a cleat that extends around the inside perimeter of the box. The cleat is 1/2" wide by 7/8" tall. The long cleats for the front and back are 22-3/16" long and the shorter cleats that fit in between those across the short ends of the box are 12-1/16" long. The cleats are just glued in place, flush with the bottom of the box (see fig. D). You can use small brads if you prefer in addition to the glue to secure the cleats to the side. Attach the long cleats first and the shorter ones should fit snugly between them. Once the glue has dried sand the box to a smooth finish.

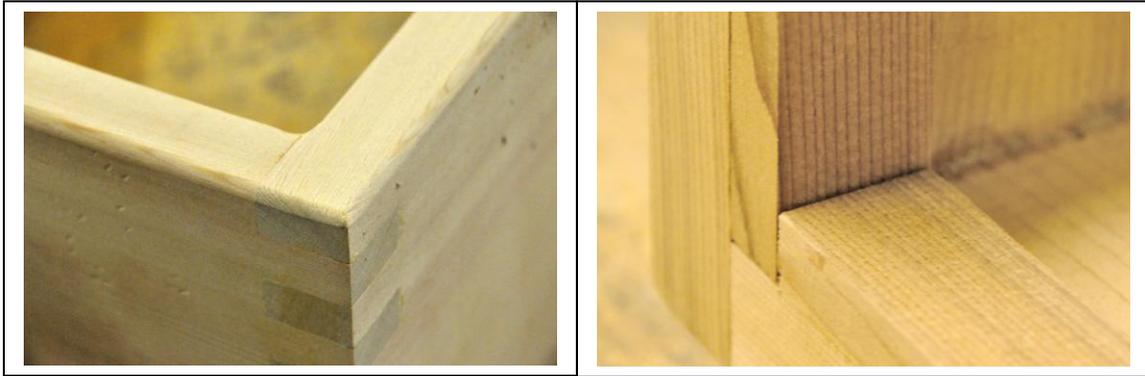


fig. C

fig. D

The final step to finishing the box construction is making and attaching the carrying handles. Each of the two handles start out as piece of stock 6" long x 2-1/2" wide. The finger pull bit will be used to create the recess in each handle. Set the finger pull bit in the router table and adjust the top of the bit until it is set 5/8" above the router table surface. Start by making a single shallow pass with just a small amount of the bit exposed past the router table fence. Reposition the fence about 1/4" further back to expose more of the bit on each pass. The final pass will have the bit cutting 1" out from the fence (see fig. E). After the finger pull profile has been machined, a 3/4" radius is cut away from the top corners using a band saw or jig saw. Sand the radius cut smooth before proceeding to the next milling operation. A 1/8" radius round over is put around the top and sides of the handle to remove the sharp corner. Be very careful not to allow the bit to cut past the finger pull profile as we want to keep that fully intact on the sides of the handle. The next step requires raising the bit height and cutting a 1/8" radius round over along the bottom of the handle (see fig. F). This cut is made on the outside face of the handle.

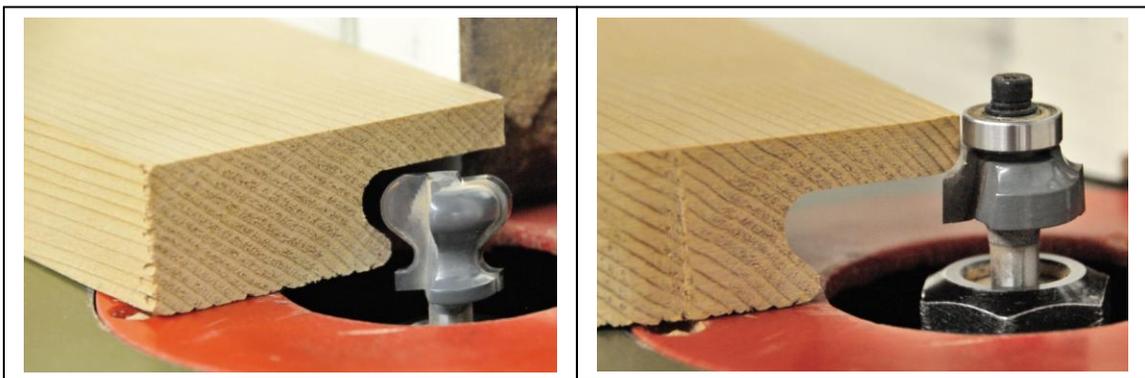


fig. E

fig. F

The handle can now be glued to the box side. Make a very light vertical line at the center of the box sides. Make another very light horizontal line 1" from the top of the box side. Make a small mark to indicate the center of the width of the handle. Apply glue to

the back face of the handle and carefully align the center mark of the handle with the vertical line and the top edge of the handle with the horizontal line (see fig. G). Use a clamp to hold the handle in position while the glue dries.



fig. G

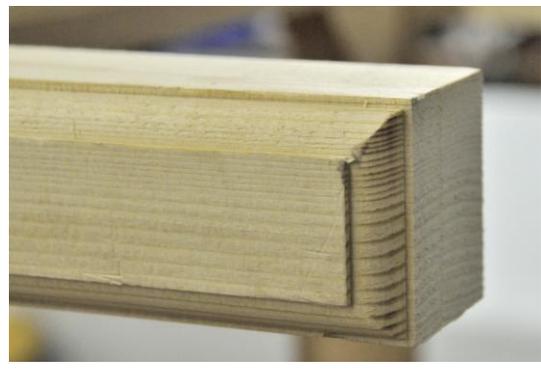


fig. H

### Making the Stand:

The legs of the stand are made from 1-1/2" square material. If you are unable to find stock this thick, you will need to glue two thinner pieces to create the stock for making the legs. Machine four legs to a finished dimension of 1-1/2" square x 37-3/4" long. The outside face of each leg will have a 1/4" radius bead profile milled around its entirety (see fig. H). The inside face will remain untouched.

Two 20-1/2" x 15" rectangular frames will be made. One for the top that the box will sit on and the other will become the bottom shelf of the stand. Cut four pieces of 2" wide stock to a length of 15". Cut four pieces of 2" wide stock to a length of 18-5/8". We are going to use a simple butt joint to glue the 18-5/8" long pieces to the inside of the 15" long pieces. Apply glue to the ends of the longer pieces and glue them in between the 15" long pieces. Use a square or measure corner to corner to make sure the corners are all square before applying full clamping pressure. The top rectangular will be left with the center open. You can add optional triangular support blocks to the corners of the top rectangular frame for additional support if desired. The bottom rectangular frame will have mounting cleats and slats glued into it for additional support so do not add any support blocks to the bottom rectangular frame.

Cut five 18-5/8" long x 7/8" thick slats out of 2-3/8" wide stock to fit into the bottom rectangular frame (see fig. I). A cleat will need to be added to each end for the slats to sit on. This cleat will be 13-1/8" long and 7/8" square (see fig J). Use a piece of 7/8" thick scrap to get the cleat positioned at the correct height on the inside of the rectangular frame. Lay the frame face down on a flat surface. Place the piece of 7/8" thick scrap against one of the short ends of the rectangular frame. Glue the cleat in position so that when the frame is turned over, the slats will sit flush with the top rectangular frame. Repeat for the opposite end. After the glue has dried, flip the frame over and glue the slats to the cleat leaving even gaps approximately 7/32" wide between each slat and the frame.



fig. I



fig. J

Once the glue has dried on the upper and lower rectangular frames, use the 1/4" radius beading bit to make a beaded profile on the top and bottom of the outside face of the frames

### Mounting the Legs to the Rectangular Frames:

A spacer block for the top and bottom position of the rectangular frames will make getting the legs secured to the frames at the correct height. The top spacer block needs to be 6-1/4" long and the bottom spacer block needs to be 3" long. Place two of the legs outer face down on a flat surface with the outer edges 20-5/8" apart. Place the upper rectangular frame on them. The legs should be flush with the long end of the frame. Use the longer spacer block and place it on the leg so it is flush with the top of the leg and position the upper frame so it is touching the opposite end of the spacer block (see fig K). Make sure that the leg is flush with the rectangular frame and drill a countersunk hole through the inside of the frame into the back of the leg. Use one of the 1-1/2" long woodscrews to secure the leg to the frame. Using a square, make sure the frame is square to the leg (see fig. L) and drill a second hole and secure the leg with another screw in this second hole (see fig M). Repeat with the opposite leg.

Place the lower rectangular frame on the legs. The legs should be flush with the long end of the frame. Use the shorter spacer block and place it on the leg so it is flush with the bottom of the leg and position the lower frame so the bottom edge is touching the opposite end of the spacer block (see fig. N). Make sure that the leg is flush with the rectangular frame and drill a countersunk hole through the inside of the frame into the back of the leg. Use one of the 1-1/2" long woodscrews to secure the leg to the frame. Using a square, make sure the frame is square to the leg and drill a second hole and secure the leg with another screw in this second hole. Repeat with the opposite leg. Flip the assembly over and attach the remaining two legs in the same fashion.

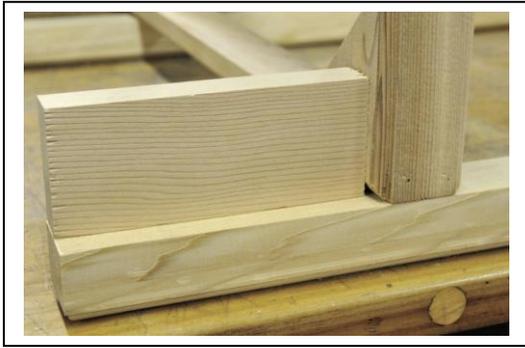


fig. K

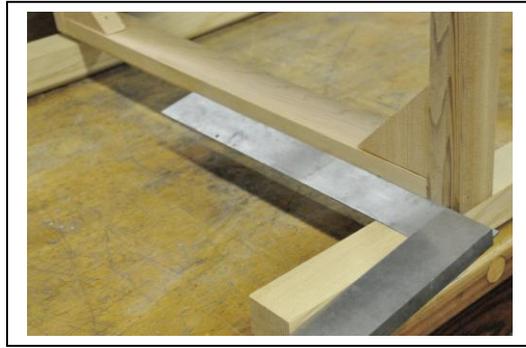


fig. L

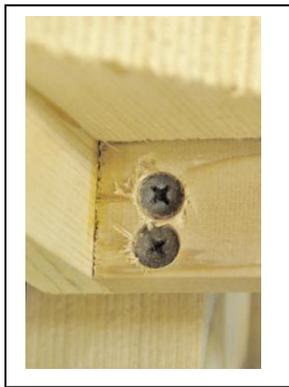


fig. M



fig. N

Place the stand on the ground and the box should simply sit on the rectangular frame. The section of the legs that are protruding above the upper frame will keep the box positioned securely on top of the frame. Apply a finish and your new plant stand / grill caddy is ready to use.