

A 3D
END GRAIN CUTTING BOARD #1
FOR 13" PLANER

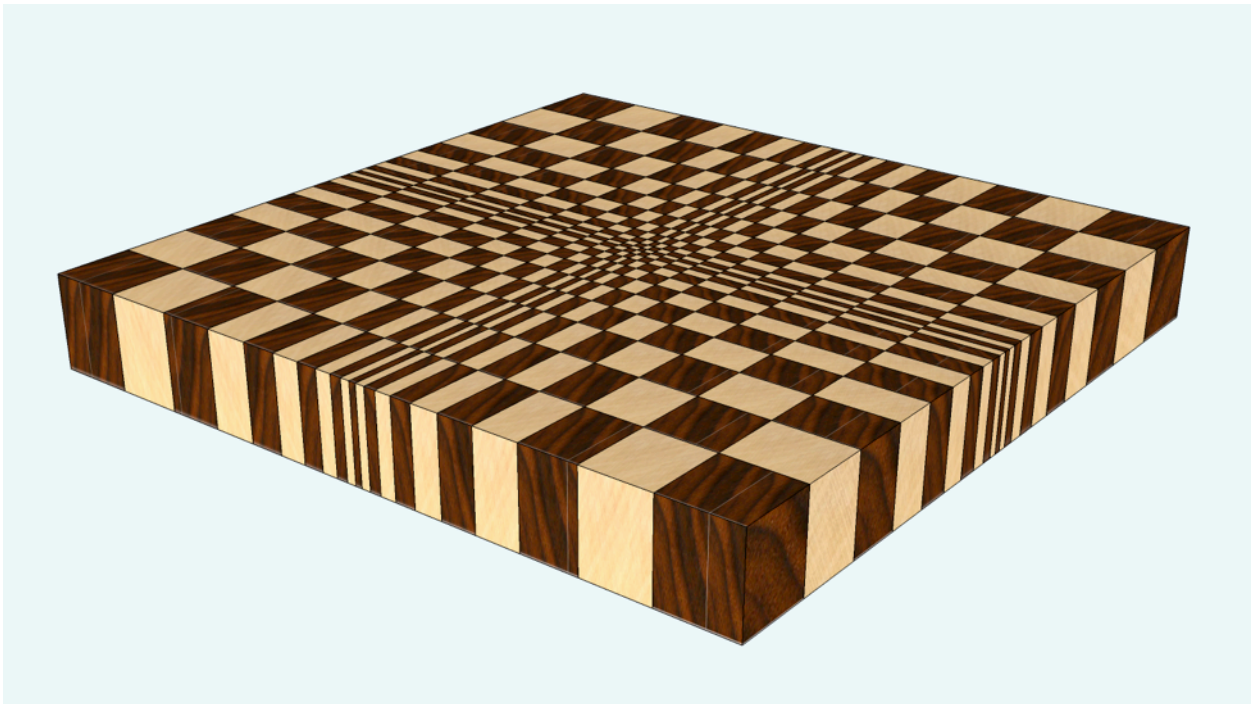


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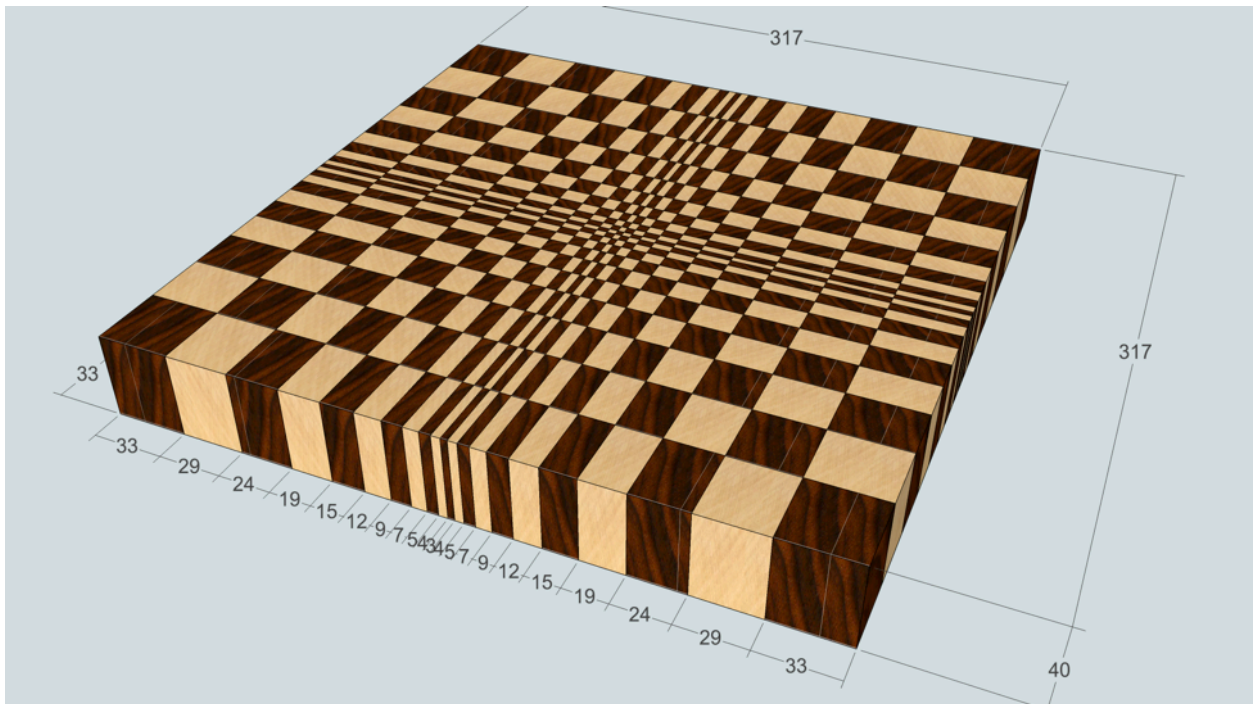
This pattern is based on an old, well-known optical illusion. The diminishing black and white rectangles create the illusion of curving lines.



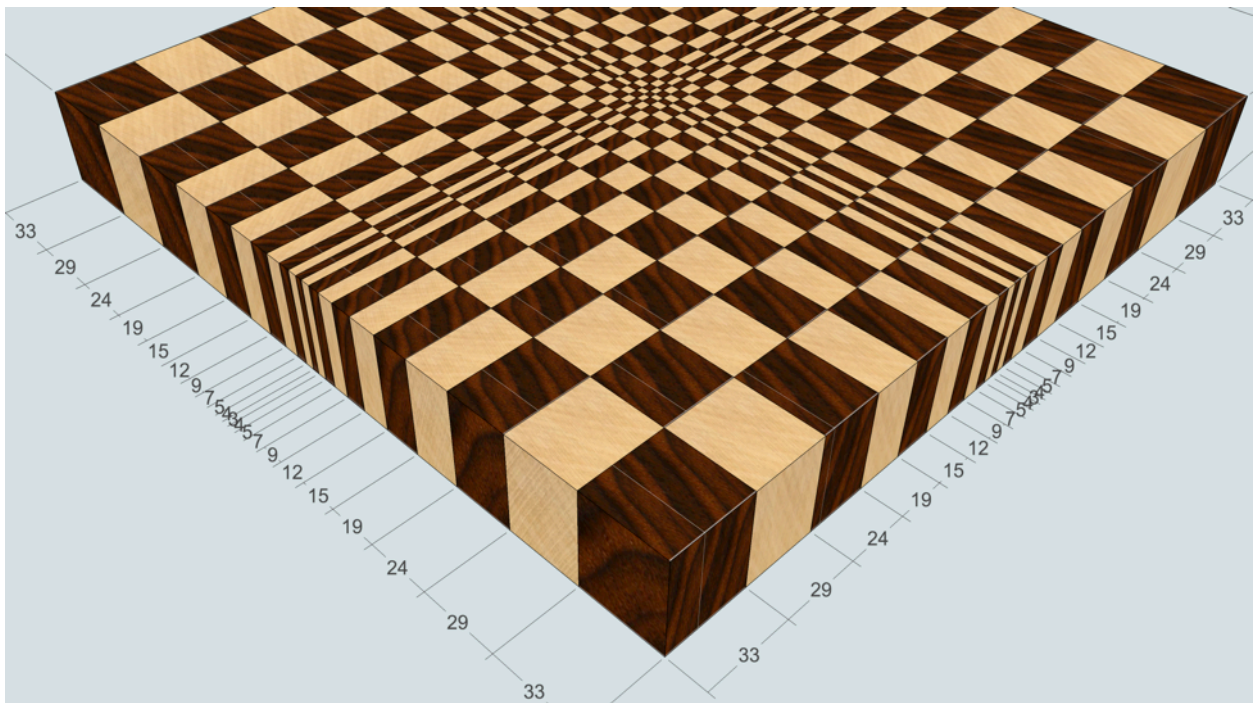
I used maple and walnut for this project. You may use other contrasting wood species. You need two types of wood: light wood (maple, hornbeam, birch) and dark wood (makore, padauk, walnut, sapele, purpleheart).



The drawings of the board. All dimensions are in mm. If you want to convert them to inches open SketchUp model, go to the Window-Model Info-Units and choose "Inches".

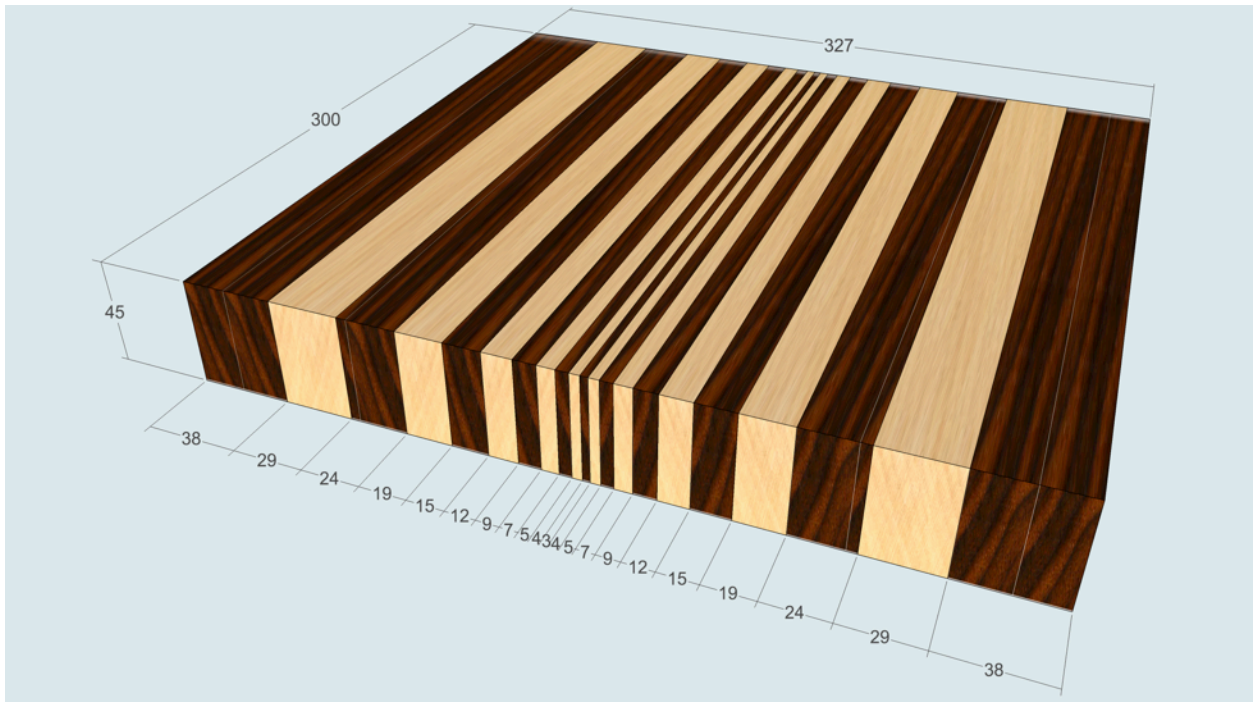


Note that this board is a square. So the dimensions of the appropriate rectangles at all sides of the board are the same.

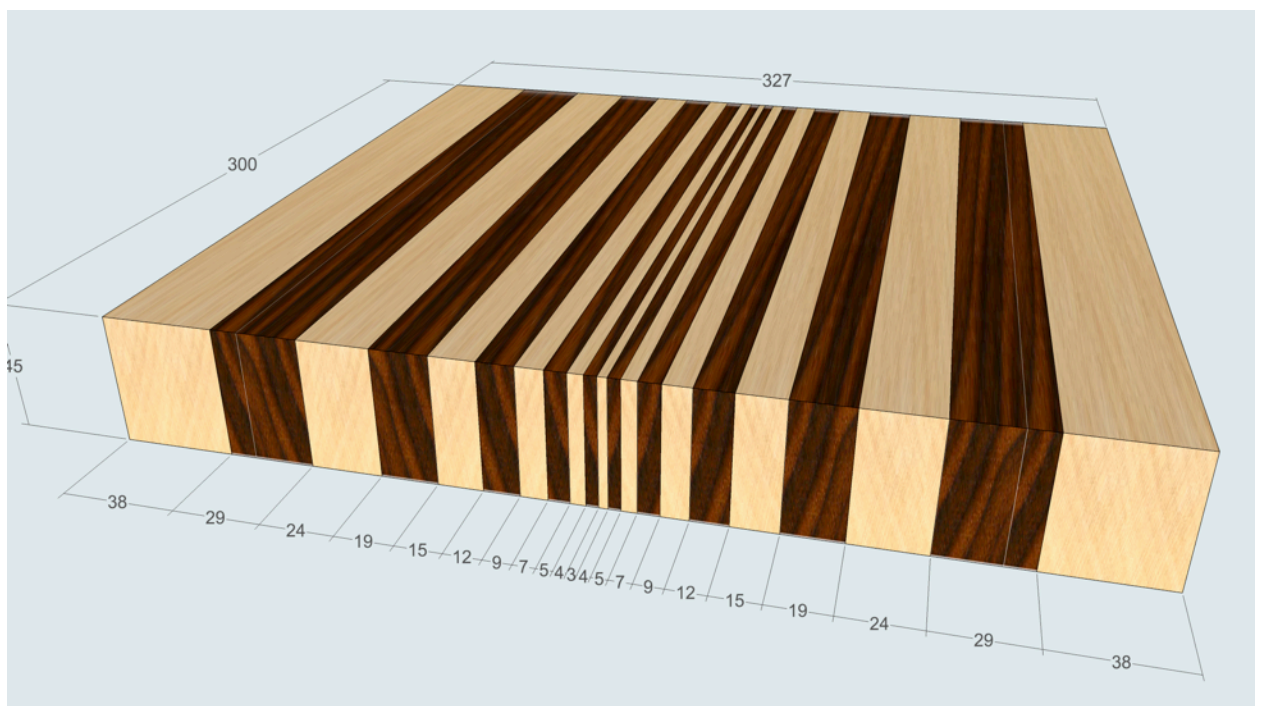


First you should make two initial wooden panels. Each panel consists of maple and walnut strips. The 2nd panel is a "colour negative" of the 1st panel. You can make the thickness of the panels equal 45-50 mm if you use 2" lumber. The exact thickness is not important. Note, that the edge strips are 5 mm wider than the same strips in the finished cutting board (38 mm vs 33 mm).

The 1st panel:



The 2nd panel:



Prepare maple and walnut lumber. The thickness of all lumber must be the same. Cut your lumber on the narrow strips.

The 1st panel consist of the following strips:

Walnut:

- 3 mm – 1 pc;
- 5 mm – 2 pcs;
- 9 mm - 2 pcs;
- 15 mm - 2 pcs;
- 24 mm - 2 pcs;
- 38 mm - 2 pcs;

Maple:

- 4 mm - 2 pcs;
- 7 mm – 2 pcs;
- 12 mm - 2 pcs;
- 19 mm – 2 pcs;
- 29 mm - 2 pcs;

Total: 21 pcs.

The 2nd panel:

Maple:

- 3 mm – 1 pc;
- 5 mm – 2 pcs;
- 9 mm - 2 pcs;
- 15 mm - 2 pcs;
- 24 mm - 2 pcs;
- 38 mm - 2 pcs;

Walnut:

- 4 mm - 2 pcs;
- 7 mm – 2 pcs;
- 12 mm - 2 pcs;
- 19 mm – 2 pcs;
- 29 mm - 2 pcs;

Total: 21 pcs.

Saw off the maple and the walnut strips at the table saw for both panels at once.
Make them 1.5 mm thicker than in the drawings.



Mark the strips.



Make the needed thickness of the strips at the planer.

NB! It is extremely important to plane all strips of the same thickness from both panels at one time at the same level of the planer. The parts you get from two panels will be assembled in one cutting board, so even small differences in thickness will break the pattern of the cutting board.



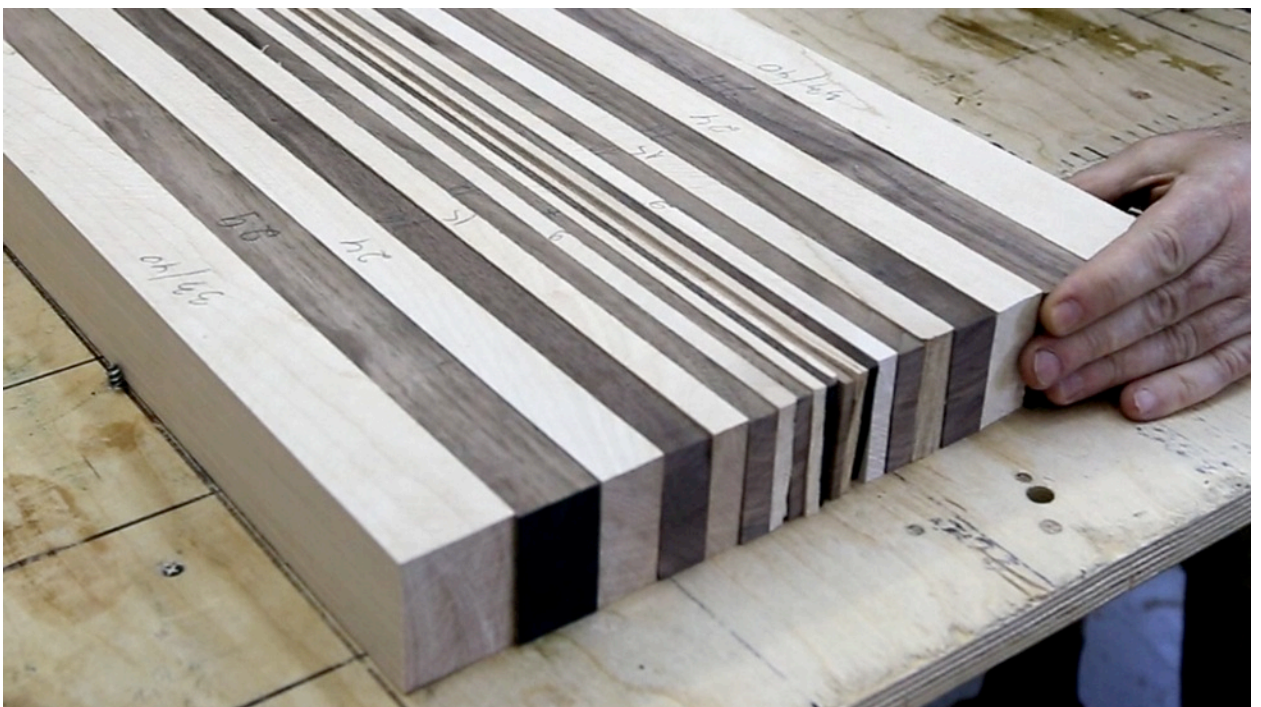
For example, set the level of the planer at 15 mm and plane all four 15 mm strips from two panels at once. The actual thickness may be slightly more or less than 15 mm, but the thickness of all four strips must be the same!

Assemble the panels.

The 1st panel:



The 2nd panel:



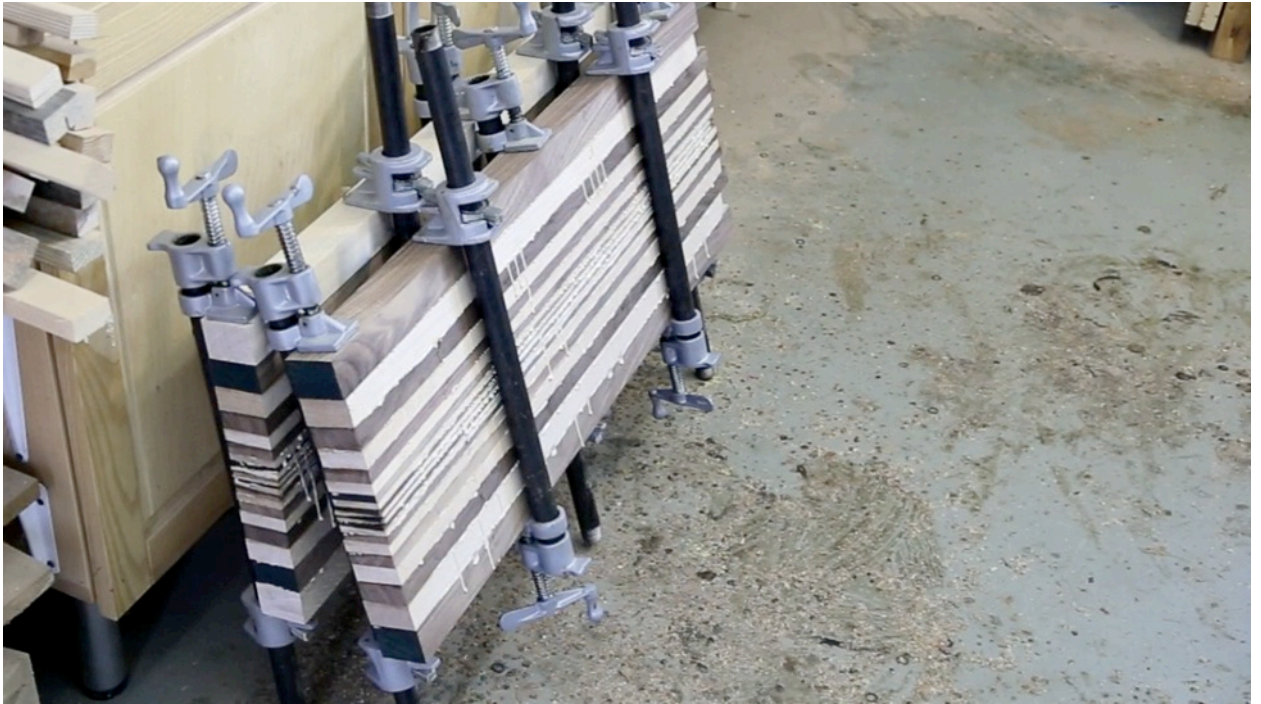
Glue the panels.



The distance between clamps must be not more than 200 mm.



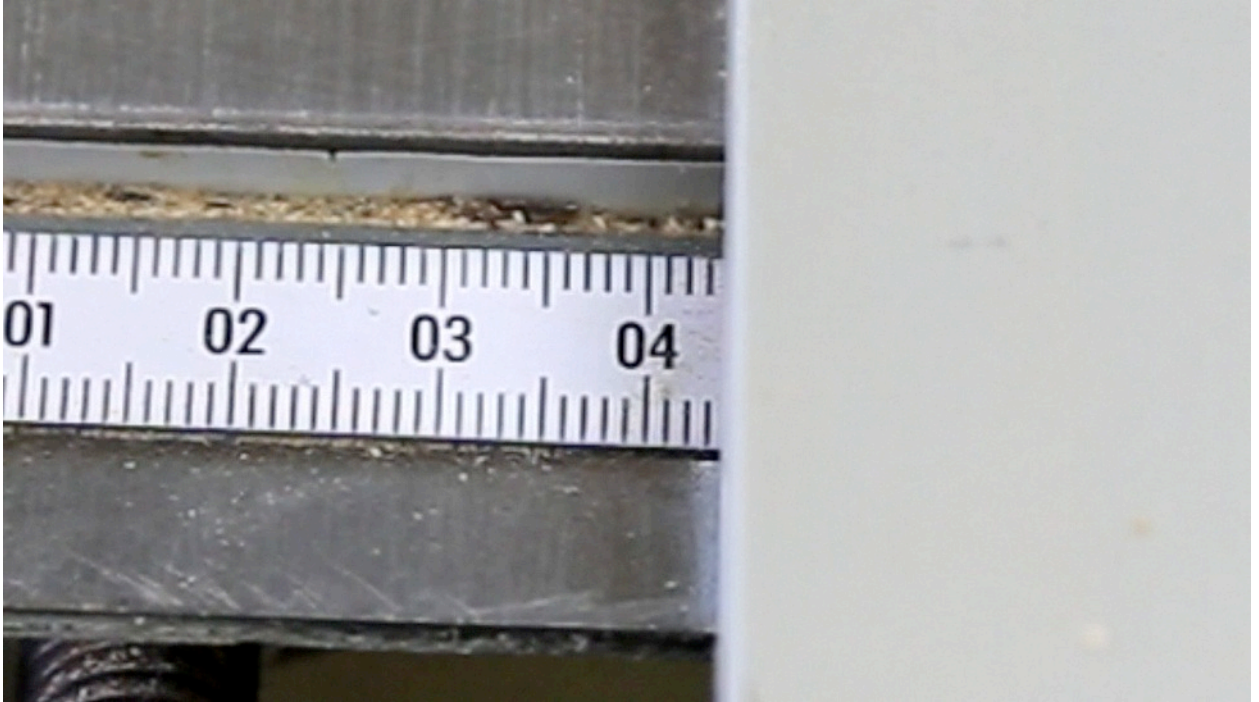
Wait a night.



Next day plane the panels. Don't worry about the same thickness of the panels.



Set the table saw cutting width of 42-43 mm. The thickness of finished cutting board should be 40 mm.



Saw off 42-43 mm wide end grain strips. Usually 4-5 strips are enough to make one board.



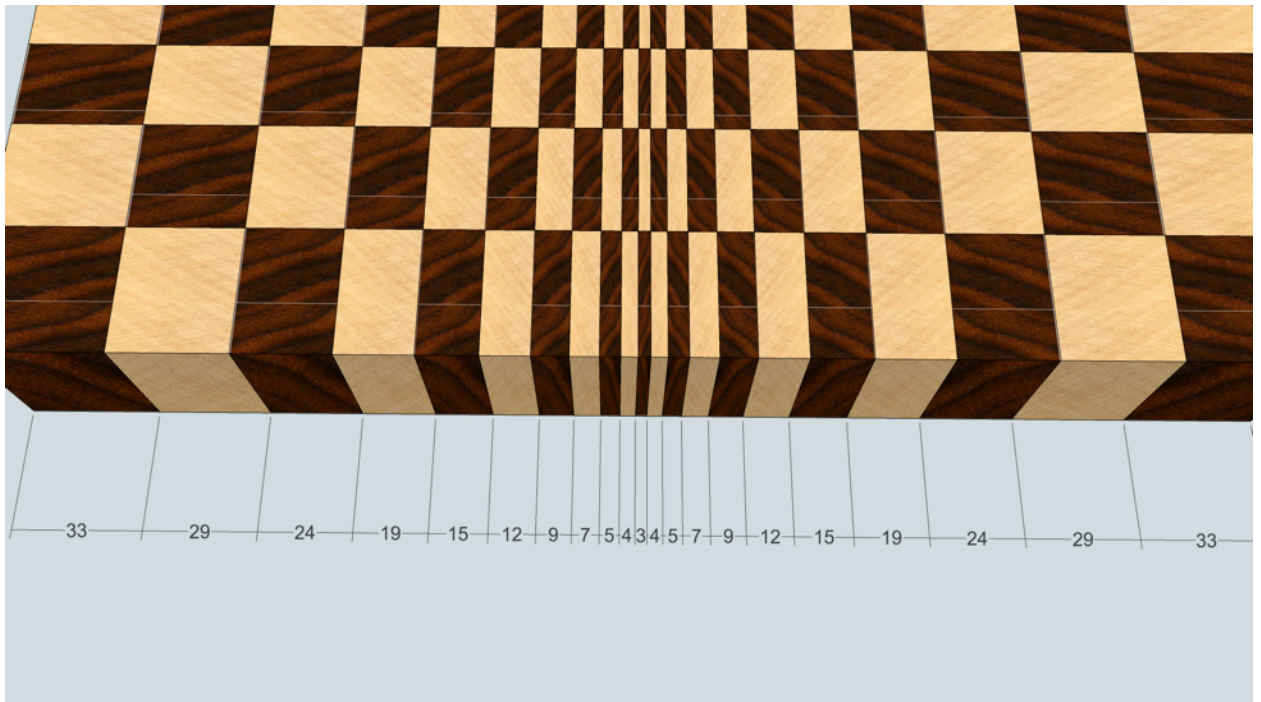
Rotate each strip 90 degrees so that the end grain is up.



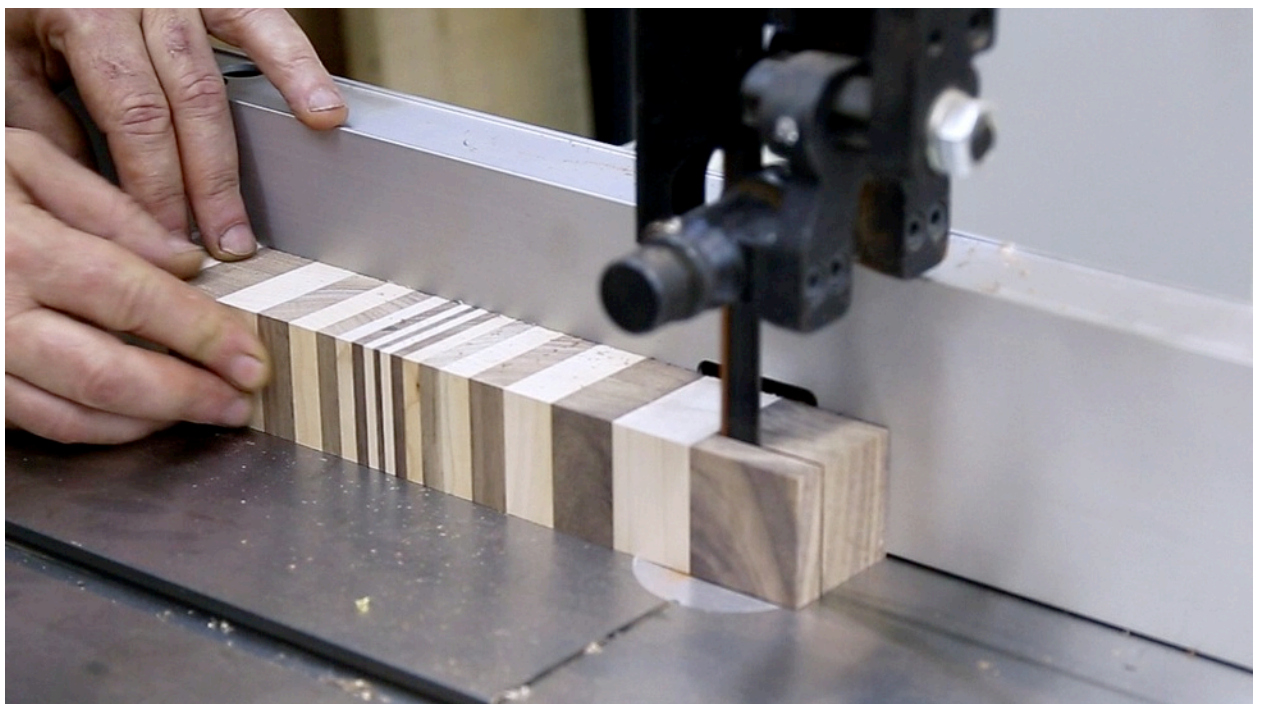
Mark the upper side of the strips and do not rotate them lately. This helps to make a more accurate pattern.



Make the thinner end grain strips at the table saw or band saw according to the drawings.



Make the strip thicker 1 mm than in the drawings. You will remove the excess at the drum sander later.



Mark the strips.



You should make the following strips:

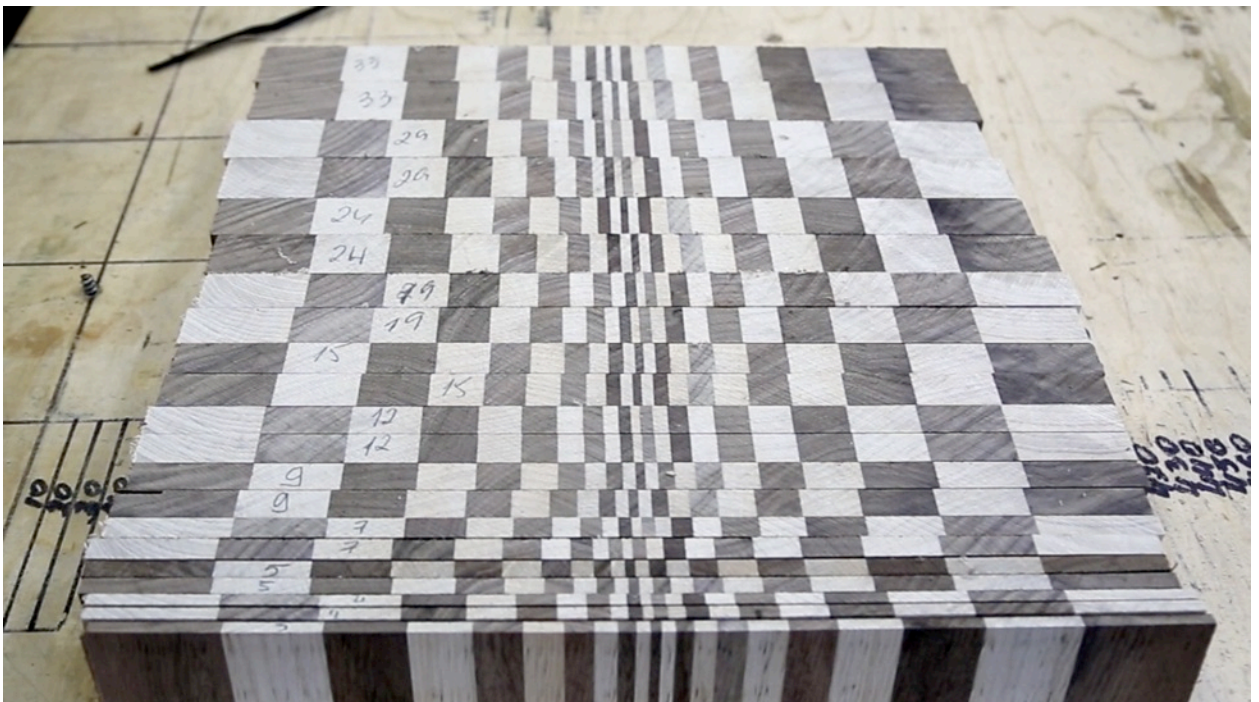
1st panel strips, mm:

33 (2 pcs.), 24 (2 pcs.), 15 (2 pcs.), 9 (2 pcs.), 5 (2 pcs.), 3 (1 pc.);

2nd panel strips, mm:

29 (2 pcs.), 19 (2 pcs.), 12 (2 pcs.), 7 (2 pcs.), 4 (2 pcs.).

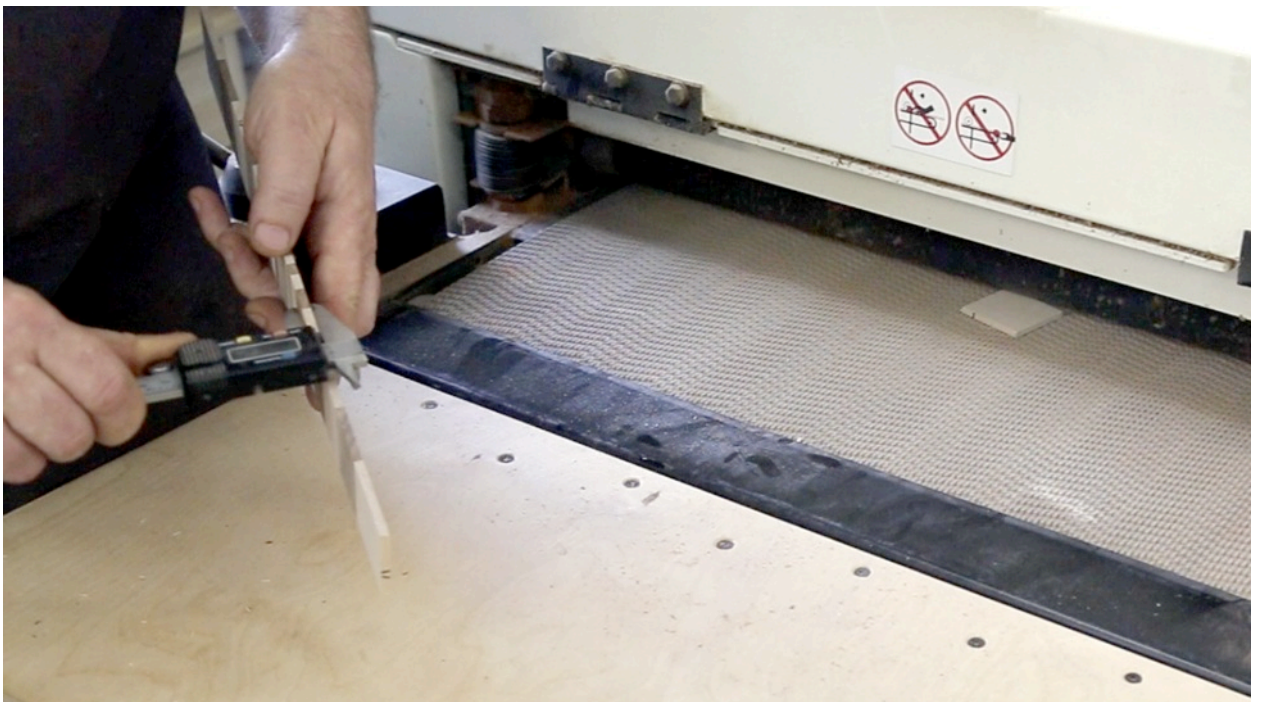
Total: 21 pcs.



Use the drum sander to sand the strips.



Check the thickness.

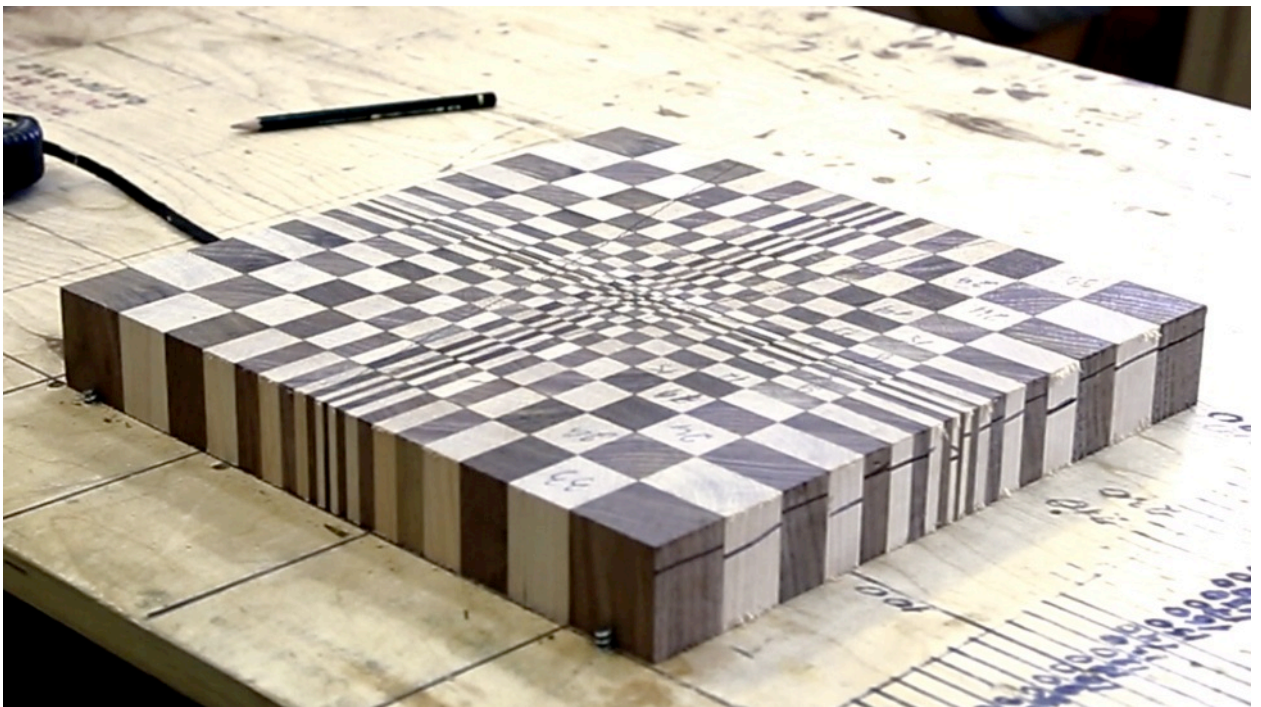


Assemble the cutting board. Start from the edge.



The correct sequence of the strips is the following:

1st panel – 33 mm;
2nd panel – 29 mm
1st panel – 24 mm;
2nd panel – 19 mm
1st panel – 15 mm;
2nd panel – 12 mm
1st panel – 9 mm;
2nd panel – 7 mm
1st panel – 5 mm;
2nd panel – 4 mm
1st panel – 3 mm;
2nd panel – 4 mm
1st panel – 5 mm;
2nd panel – 7 mm
1st panel – 9 mm;
2nd panel – 12 mm
1st panel – 15 mm;
2nd panel – 19 mm
1st panel – 24 mm;
2nd panel – 29 mm
1st panel – 33 mm;
Total: 21 pcs.



Glue the cutting board. Use Titebond III glue.



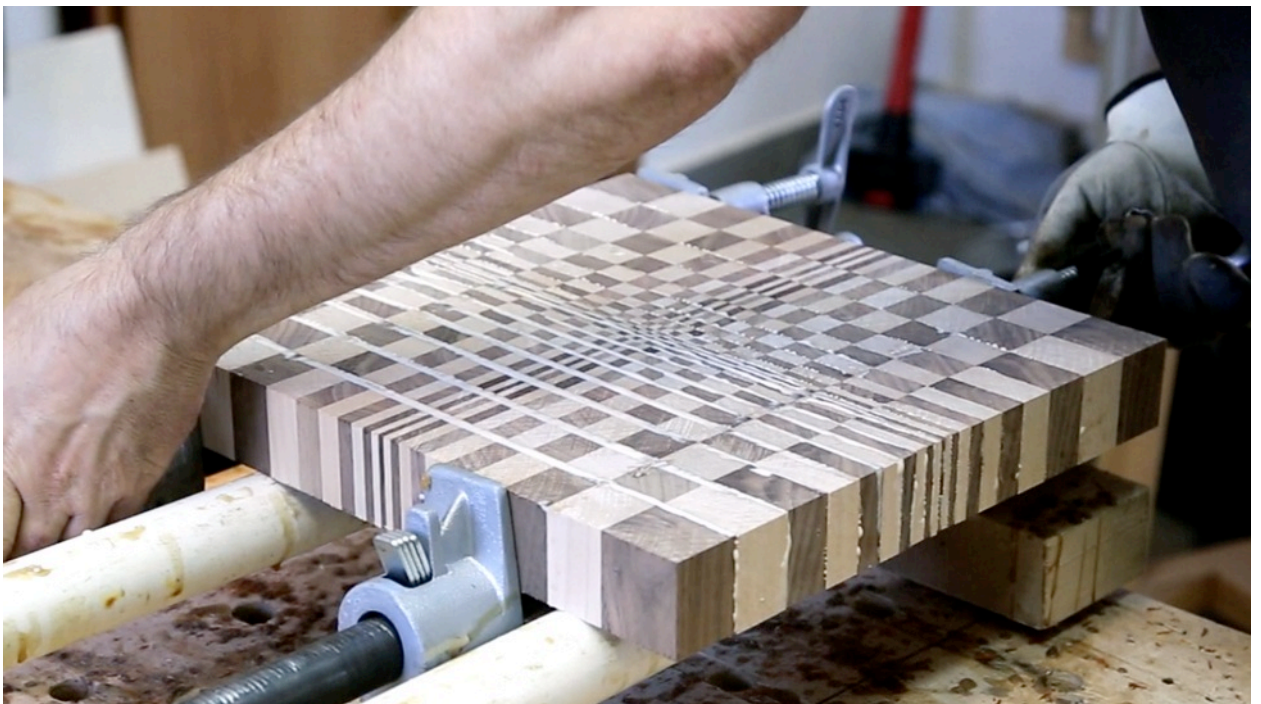
Be accurate assembling the strips. Join the corners of the middle 3 mm maple and walnut rectangles. Control this visually. It is useless to align the strips with the side clamps.



NB! Don't move the strips when clamping! It occurs very often and cannot be corrected. To do this place two clamps exactly perpendicular to the edge of the board and slightly tighten them.



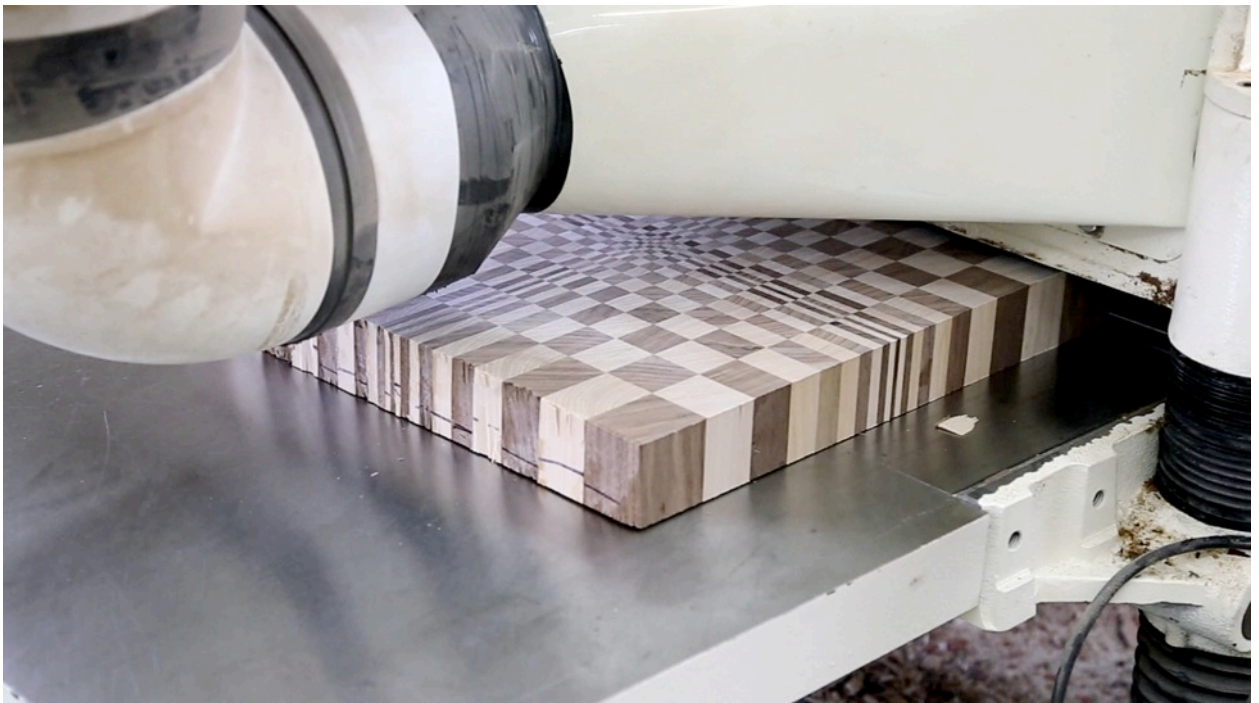
Then turn the board over, place two more clamps and tighten all four clamps with the same force.



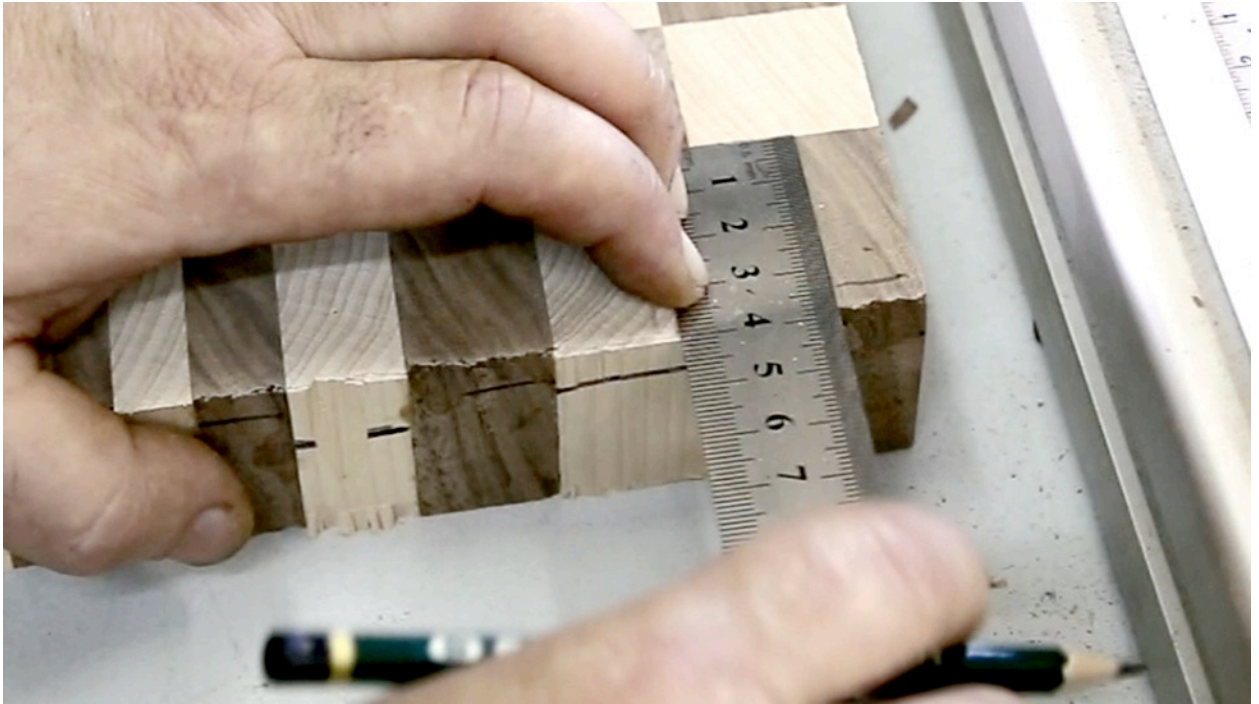
Tighten all clamps little by little.
Wait 24 hours.



Plane or sand the board. The planer experiences high overloads while planing the end grain surfaces. Therefore it is necessary to remove only 0.3-0.5 mm of material in one pass. Also it is necessary to reduce this value twice during the last pass.



Make the sides of the edge rectangles equal 33 mm.

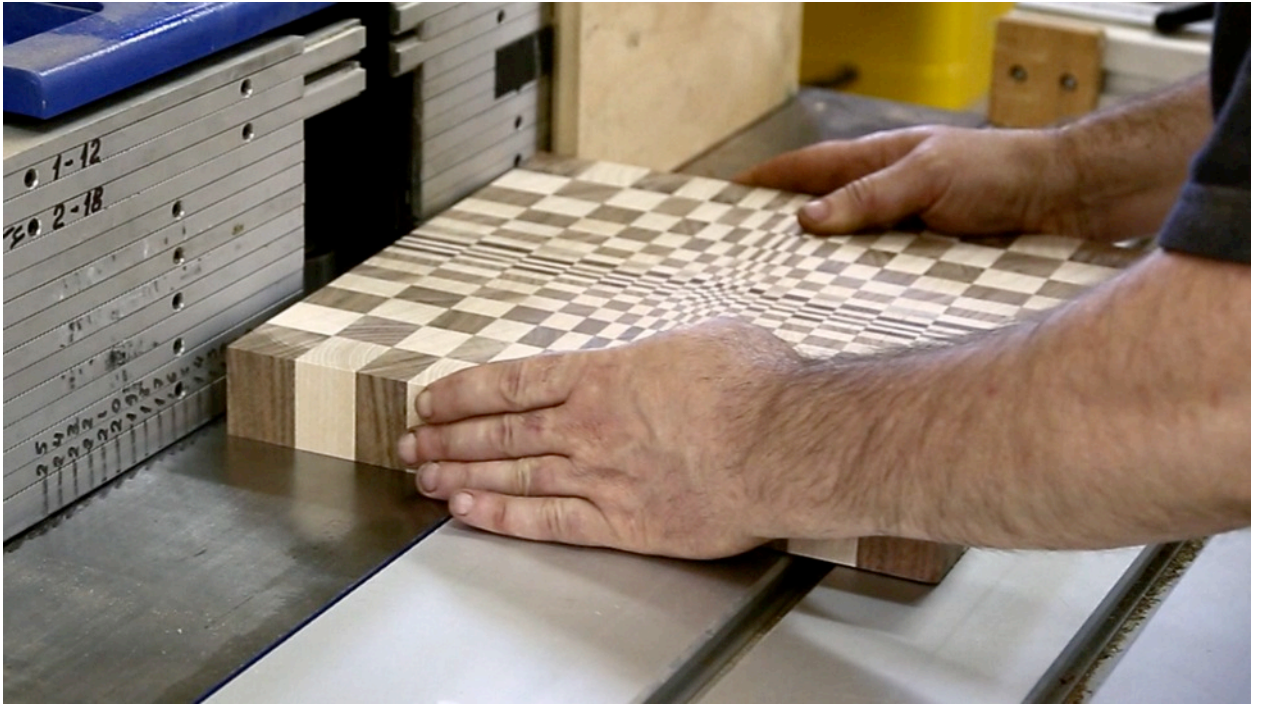


Saw off the excess.



Saw off the sacrificial rails if you used them.

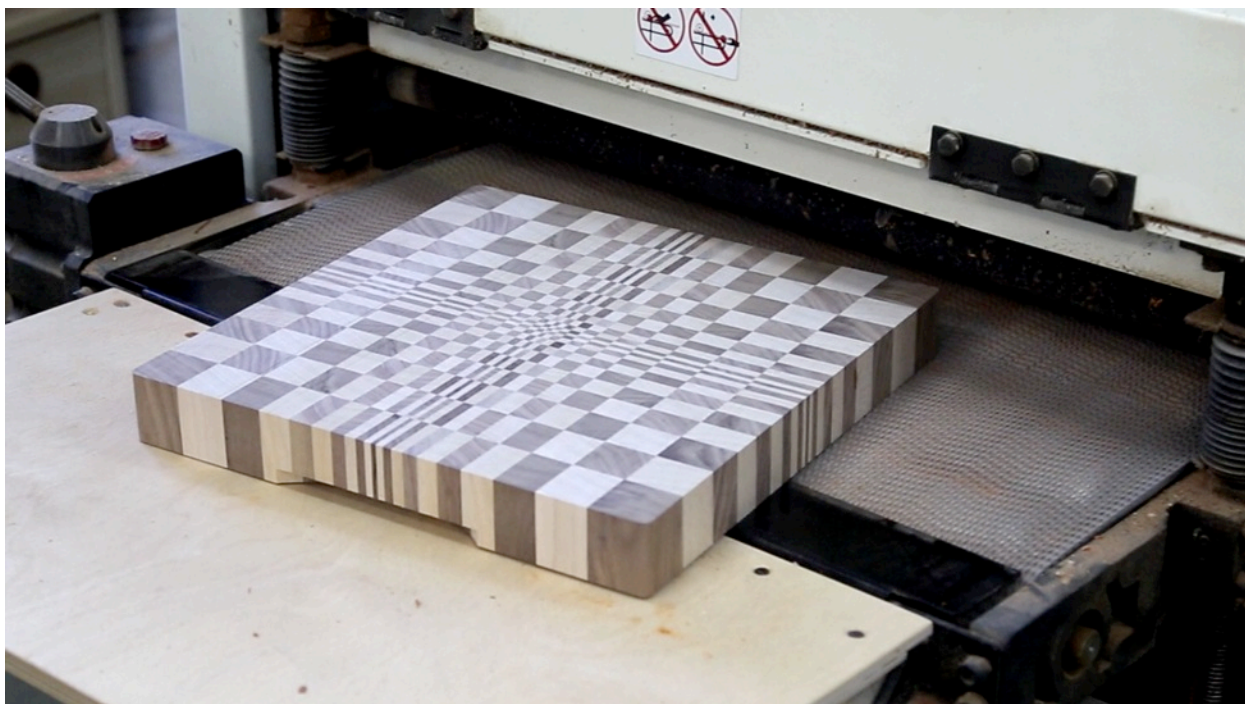
Make the finger grips at the shaper or by the router.



Sand the edges of the board along the grain and slightly round the corners.



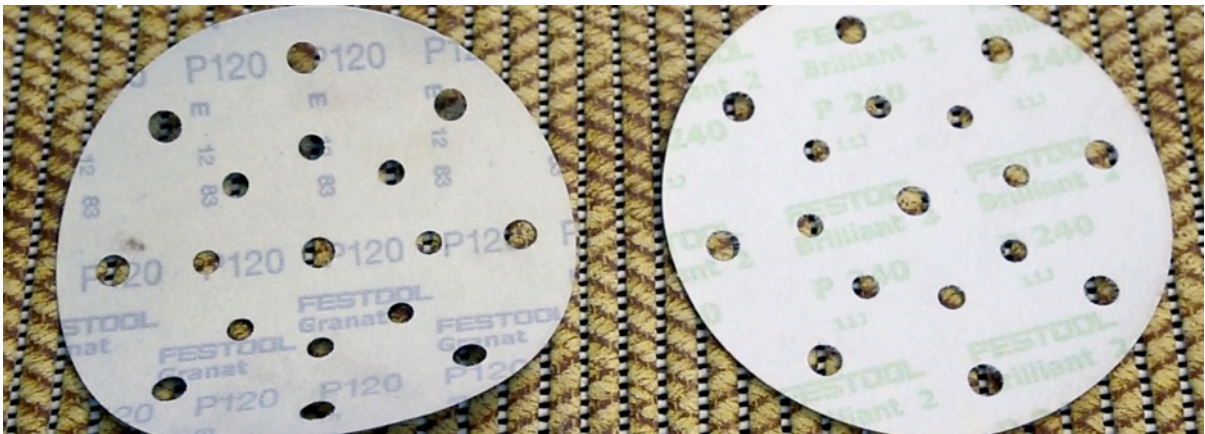
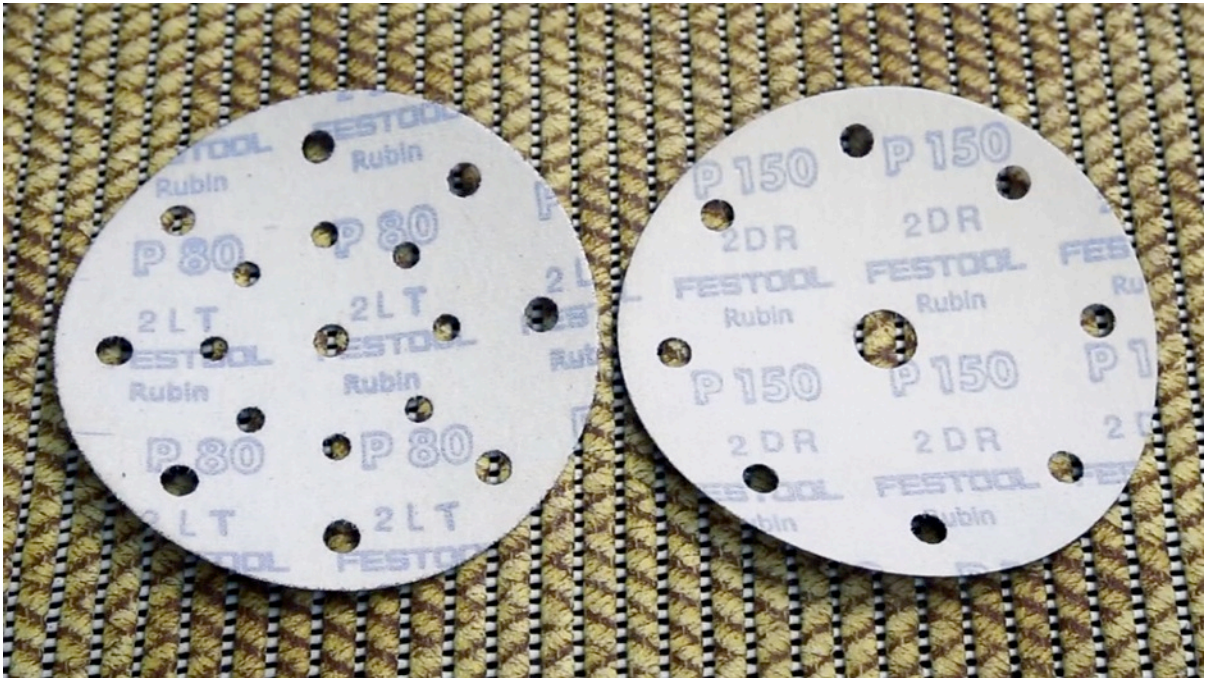
Sand the board at the drum sander.



Sand the board with the rotary sander.



You can use different combinations of sandpaper to get the surface you like. The grit number of the sandpaper you use on each pass must not exceed that of the previous more than twice.



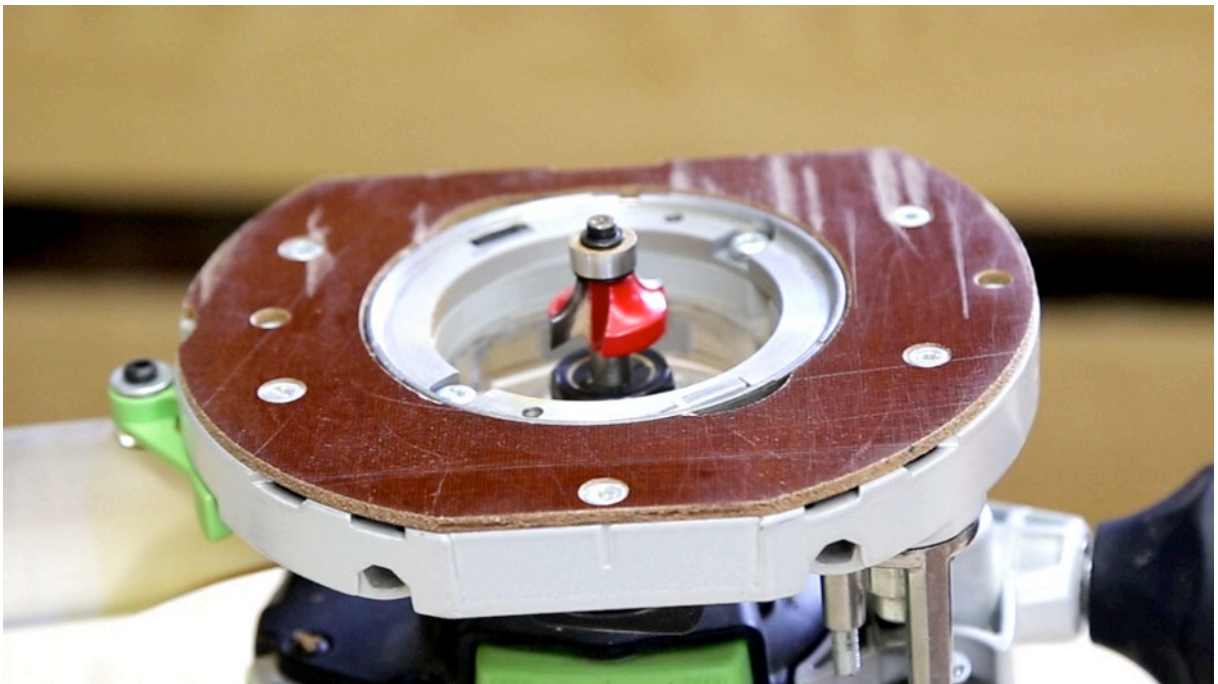


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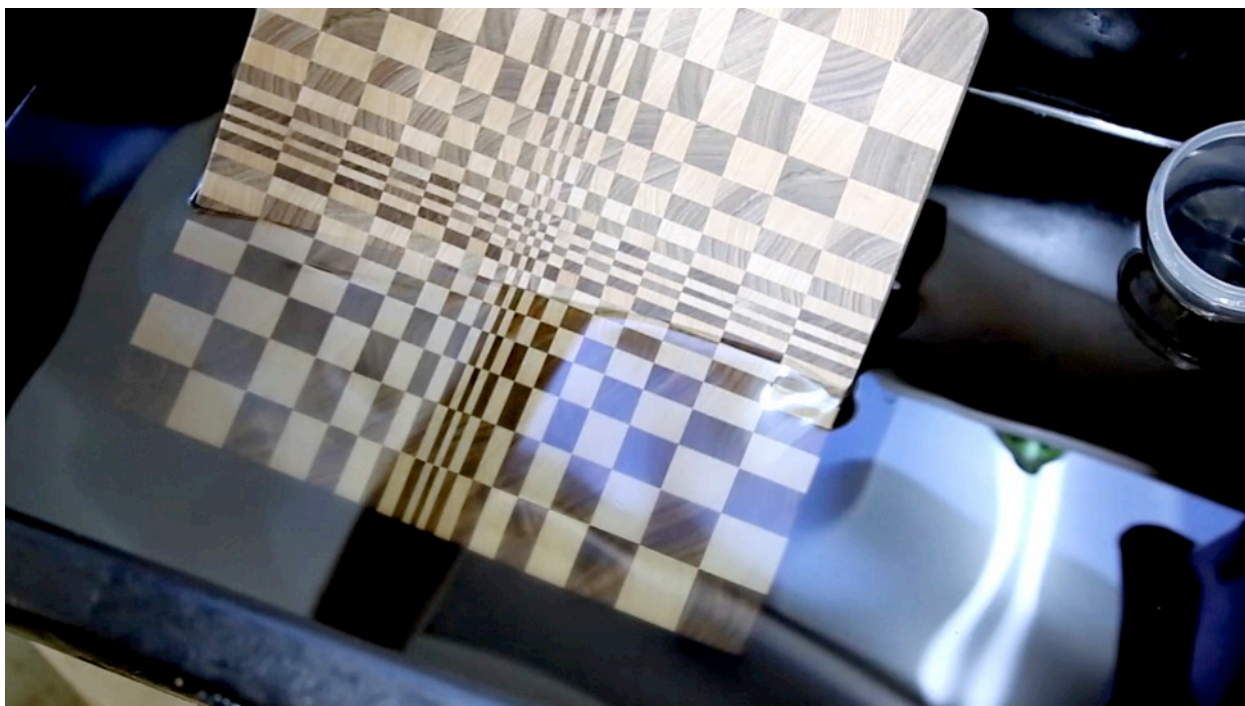
Round all sharp corners with a sanding block.



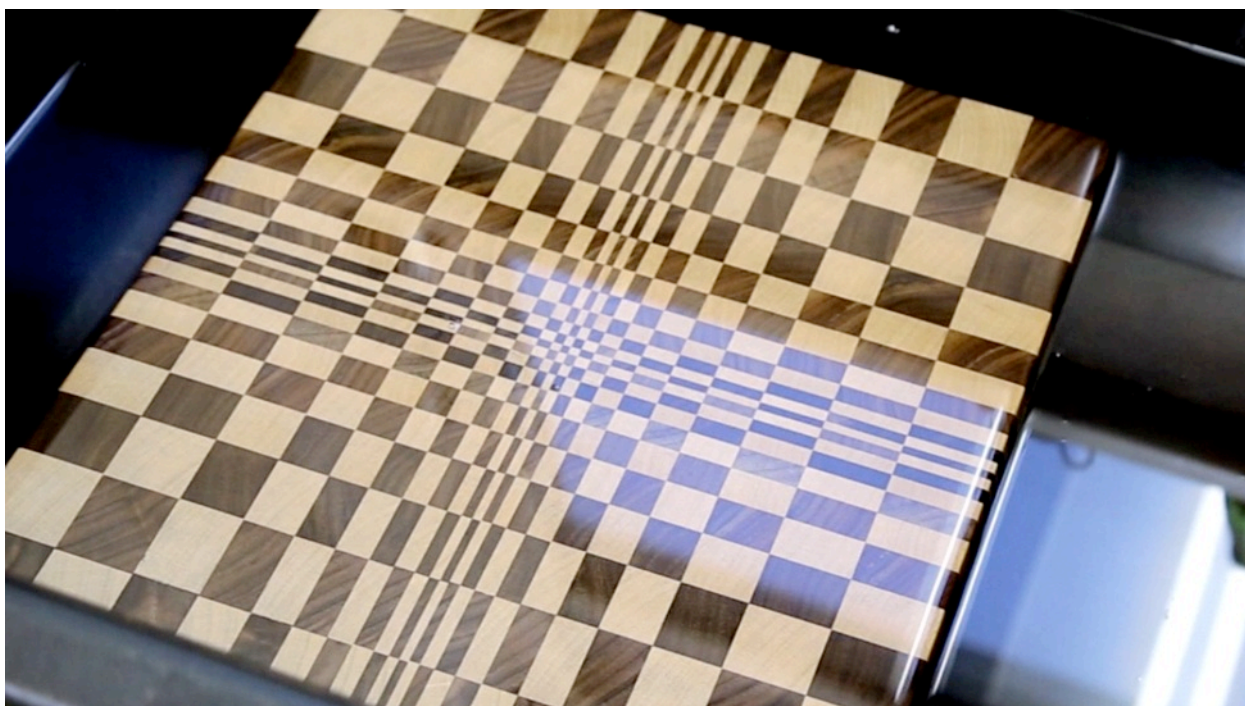
You can also use the router with rounding bit.



Treat the board with mineral oil. You should firmly close the pores of the wood and prevent the ingress of moisture into the grains.



I use a mineral oil bath for 10-15 seconds. Then I dry the board for 6 hours and repeat the oiling.



Apply the hot mineral oil/beeswax mixture (4:1 ratio).



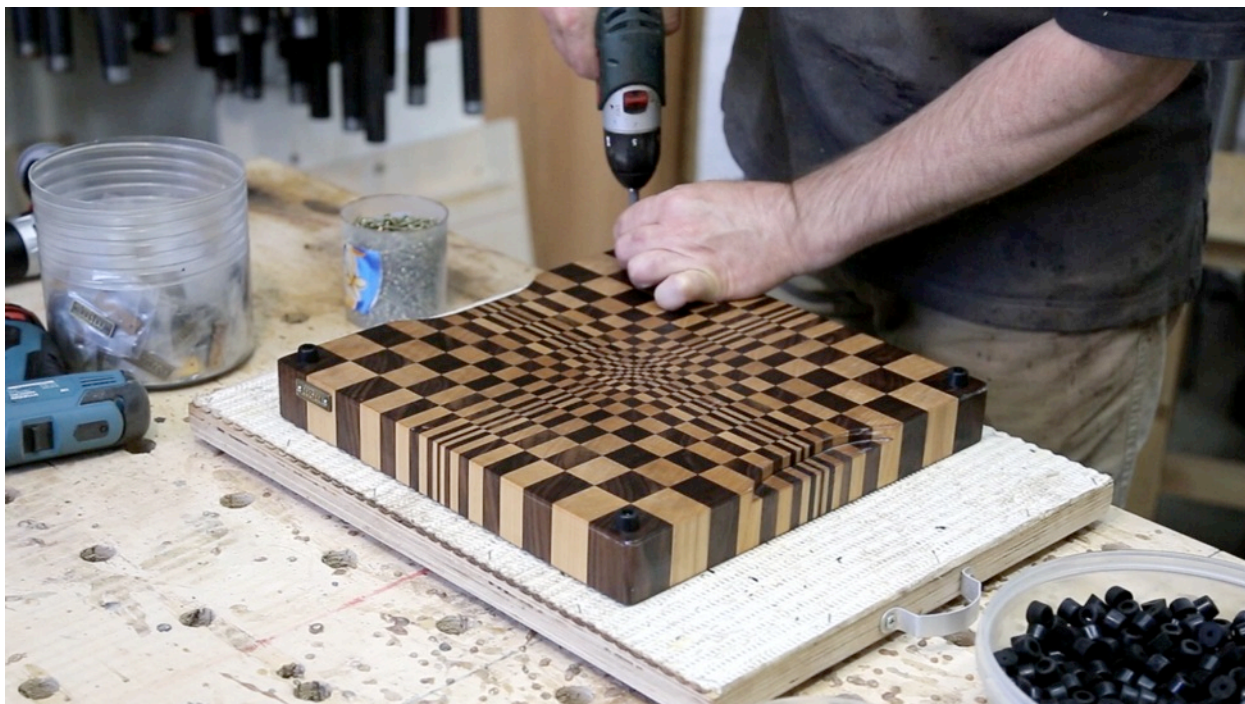
Also it is possible to use linseed or pure tung oil. Sunflower, olive, and other food grade oils cannot be used for treatment, because after a while they become bitter and will transmit this taste to foodstuff.



Dry the board for 24 hours. Remove the excessive oil/wax mixture with a rag.



Screw the rubber or silicon feet with the stainless steel screws.



Enjoy your cutting board!

