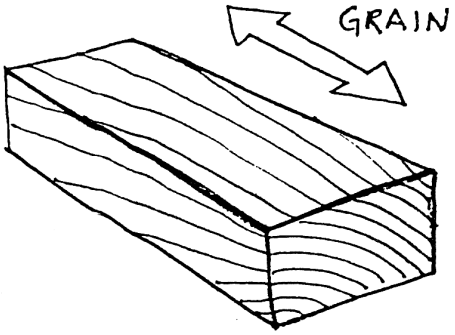
"Band Saw Box"



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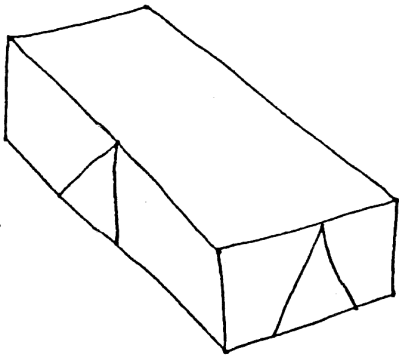

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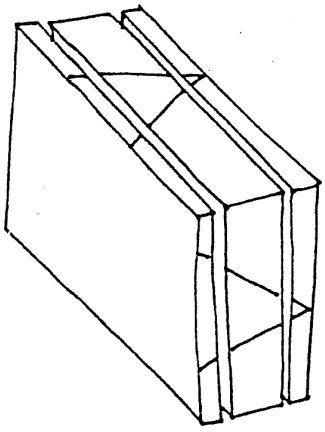

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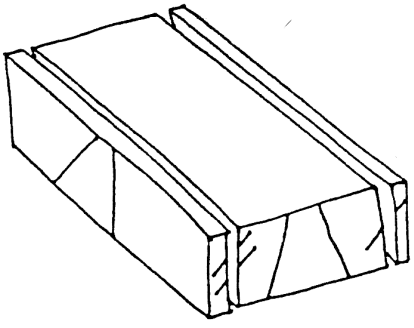


4.

Materials
Any wood you choose, white glue, sandpaper and any finish you choose. Box hardware may also be used.

Tools
Pencil, band saw, clamps, power sanders. For details: drills, carving tools, hammer, chisels, wood burning pen etc.

Method

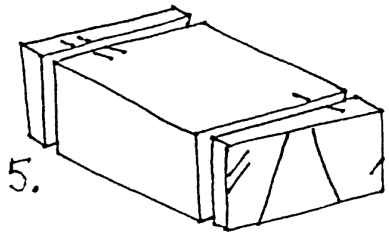
1. Select a block of wood. Faces and ends should be fairly flat and all corners should be fairly square but they don't have to be perfect. Irregular forms will be difficult and, or, risky to use with the band saw. Smaller blocks are also risky. A block approximately 2" x 3" x 5" is a good size for your first band saw box. The grain direction should run along the length of the block.

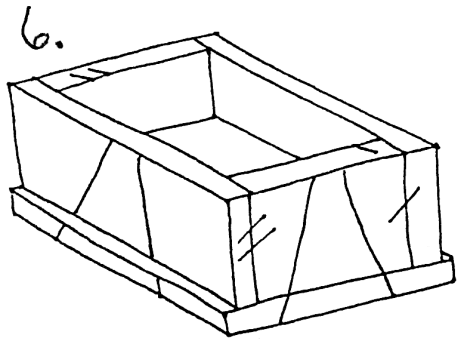
2. Make reference marks on your block before you begin cutting. The success of your box depends on being able to reassemble the pieces back into their original orientations. You will have 6 separate pieces of wood and each can flipped 4 different ways, so without reference marks reassembling your box can be quite a difficult puzzle to solve.

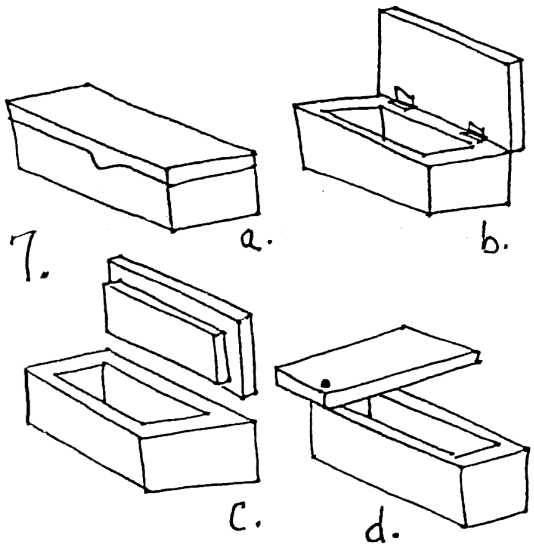
3. Cut off the top and bottom of the box. To do this, lay the block on one side and pass it through the band saw twice - once to cut off the top and once to cut off the bottom. Put these pieces aside for now.

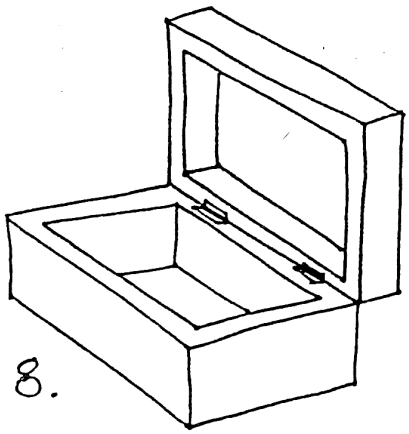
4. Cut off the sides of the box. First make reference marks on the upper surface of the block across where you're going to cut before cutting off the sides. Lay the block bottom-side-down and pass it through the band saw twice - once to cut off each side. Lay these pieces aside for now.

5. Cut off the ends of the box. First make reference marks on the upper surface of the block across where you're going to cut before cutting off the ends. Cut off both ends. These are the last two cuts and, typically, should be across the grain. Try to keep the ends from being too thin. This is because the end pieces are cut with "short grain" which is very weak and prone to splitting. The thinner the ends, the shorter the grain.









6. Glue the box parts back together. Using white glue and matching up the reference marks, reassemble all the parts of the box except the lid with glue. The saw cuts will have consumed some of the wood so the pieces won't match up exactly and will be uneven on the outside in some places. Don't worry about this now as the outside can be made even later with the sander. The pieces will have to be held in position while the glue dries. The longer you can hold it the better. You can try using your hands, tape, elastic bands or clamps to hold parts in position while the glue sets. The more pressure you can apply the better.

7. Attach or fit the lid to the box (optional). A lid can be fitted to a band saw box in a number of ways:

   a. A lid can be cut with a shape that acts as a "key" to keep the lid in position.

   b. A lid can be hinged to the box with store-bought hinges or hinges you make yourself. Hinges can be made from a variety of materials including: metal, wood, leather, cloth, paper or tape.

   c. A slice of the core can be attached to the lid as a key.

   d. A pin can be added as a pivot.

8. A completely different approach to making the lid uses the following method: When reassembling the box with glue, just glue the lid on together with the rest of the parts. Later cut the box open with the band saw. This still requires some form of attachment, however this method tends to keep the lid from changing shape or warping.

9. Shape and sand the exterior. Once the box is reassembled the exterior can be shaped, if you like, and then sanded. Do this with the lid and box held together.

10. If appropriate, apply some finish and/or colour to your turning. Polish for a smooth lustre. When using any finish, always read the instructions and the safety precautions on the product label before using.

Guidelines

1. Keep it simple. The method is more complicated than it looks. Keep track of how the pieces will fit back together as you cut the block apart. Use reference marks.

2. Keep it small, but not too small because a small block is difficult cut.

3. To make a box that has a non-rectangular exterior, create the shape of the interior cavity first, then glue the box pieces back together. After the glue has set, then you can alter the form of the box exterior.

4. Check the grain direction of the block before you begin cutting. To avoid end-grain gluing (in a typical box) you make the first two pairs of cuts parallel to the grain. Then, the final pair of cuts are made across the grain.

5. Avoid wetting the box with water because this may cause warping. This is a particular problem with band saw boxes. This means you might also want to avoid water-based stains and finishes for your band saw box.

Grading Criteria

I will be looking for:

1. Completeness and resolution of form and details

2. Maintaining the grain alignment of the original block

3. Avoiding end-grain gluing

4. Quality of finish and surface

5. Your use of the tools and machines safely, carefully, and properly.

6. Bonus marks for innovation, creativity, and/or humour.

Assignment Learning Outcomes
By completing this assignment you will be able to:

1. Produce a band saw box while maintaining the original grain orientation of the block and avoiding end-grain gluing.

2. Select wood of suitable for a box appropriate to specific functions and uses.

3. Sand, detail and finish a box appropriate to specific functions and uses.

Course Learning Outcomes
1. Students will understand the properties of wood

2. Students will learn how and when to use wood

3. Students will become familiar with wood workshop techniques

4. Students will develop ability to present ideas in verbal, model, & drawn form

Course Learning Objectives
1a), 1b), 1c), 2a), 2b), 2c), 3a), 3b), 3c), 4a), 4b)
(see course outline for details)

Key Topics
1) Safety, 2) Fastening, 3) Fabrication, 4) Finishing, 5) Equipment

Value
15% of Final Mark