Choosing and Milling Scale Wood

Hampton Roads Model Ship Society

January 14, 2023

Objectives

- Know advantages and disadvantages of working with wood not found in kits or hobby shops
- Know properties of alternate wood choices
- One way of milling wood blocks into scale lumber

Disclosures

- Half the audience knows more about the subject than I do.
  - Please stop me if I'm saying anything wrong, or you have improvements to what I am presenting
- Other half is where I was when I started doing this.
  - Please stop me if any questions
- Commercial products – no financial relationships. Chosen either because it is what I use, or there were good pictures available.

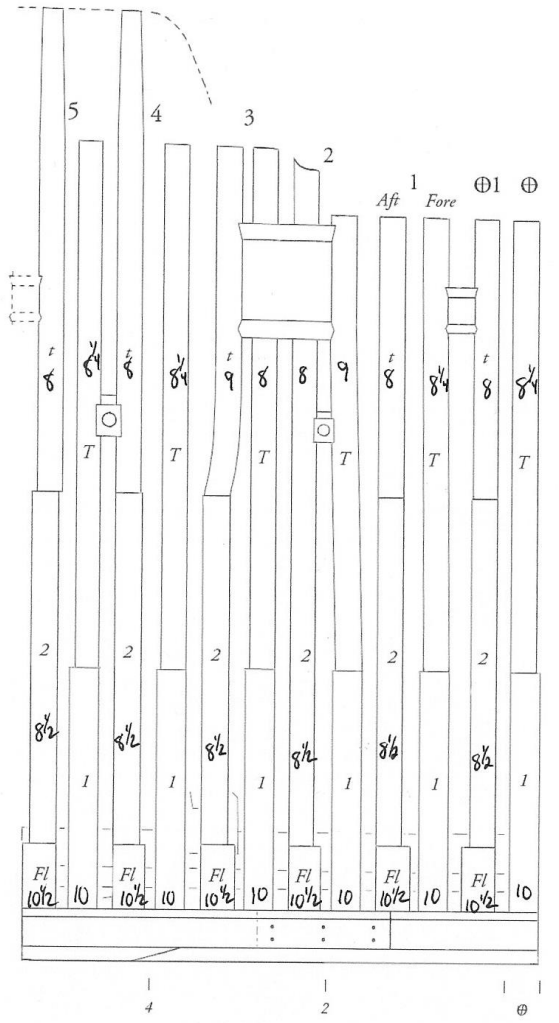
Why?

- Size
- Properties
- Color

Easily available

- Balsa, basswood, rarely some cherry and walnut
- Dimensioned by 32nds and 16ths.

Size



From the National Maritime Museum disposition of frame, old ref: 3497/Box 44, ZAZ no. unknown.

Plan from David Antscherl. Echo Cross-section

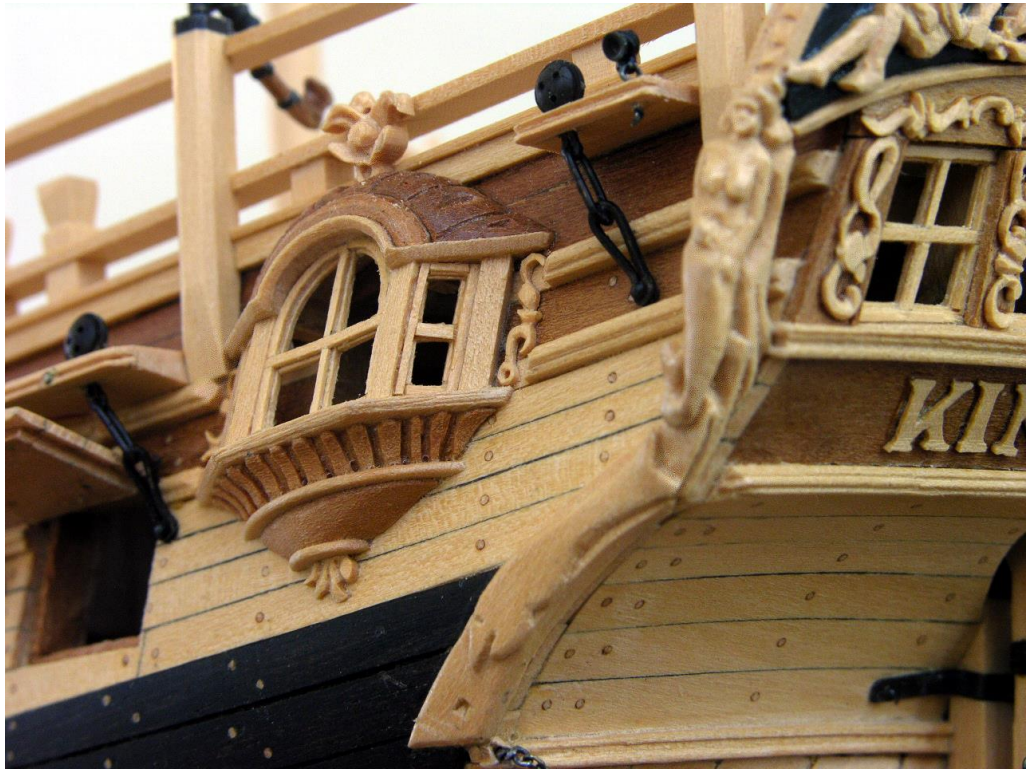

240
219
208
195
188
177
172
167

Properties

- Looks nice
- Holds an edge
- Durable
- Looks even nicer over time
- Tight grained

Minerva, 1780. Rogers Collection

Painting with wood



Harold Hahn Hannah and Kingfisher

Real Boxwood

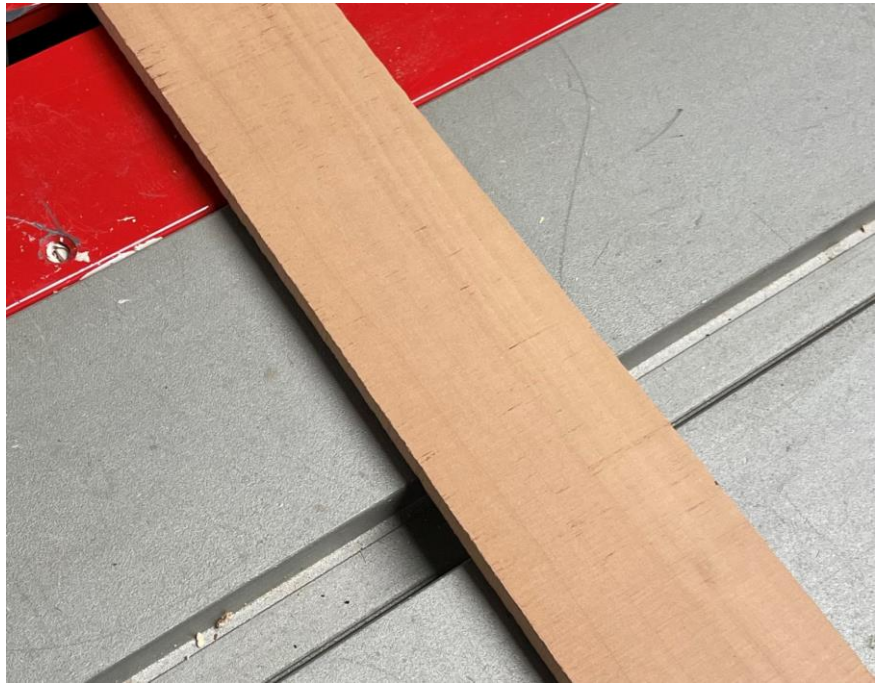
- Buxus sempeverins
- Used on most original dockyard models
- Slow growing bush/tree
- European very hard find
- Yellow color, minimal grain pattern

Castello boxwood

- Boxwood substitute
- South American
- Not really buxus
- Tight grain
- Great yellow color
- Holds edge, bends

Pear

- Grows in US
- Plain vs Swiss (steamed)
- Steaming brings out pinkish color
- Holds edge, bends well



Swiss

Plain

Ebony

- Beautiful black
- Difficult to work
  - Dense
  - Brittle
  - Does not bend
- Irritating sawdust?
- $$

Holly

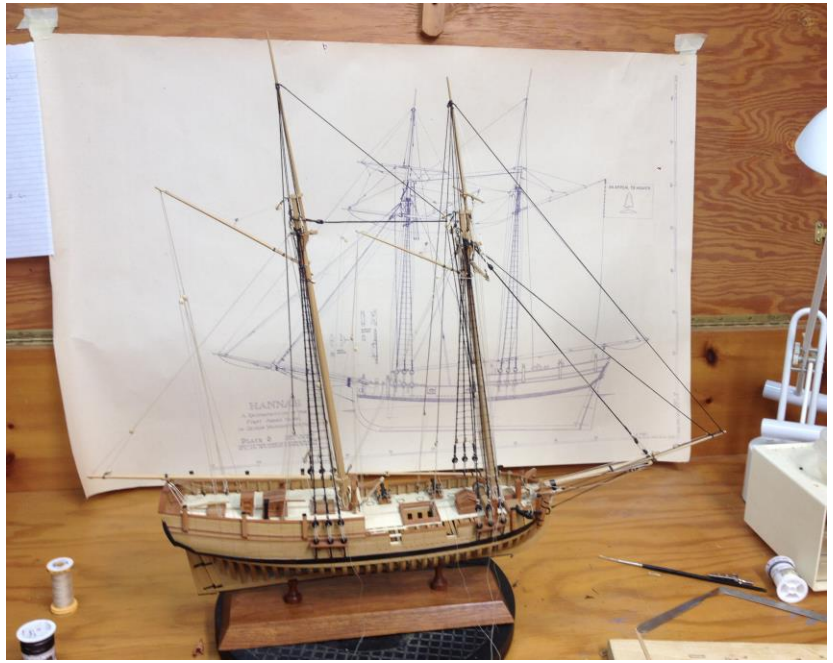
- Very white
- US
- Needs to be kiln dried after harvest or gets grey discoloration
- Careful to not discolor when finishing
- Takes dye well – simulated ebony

Other choices

Buy or Mill yourself

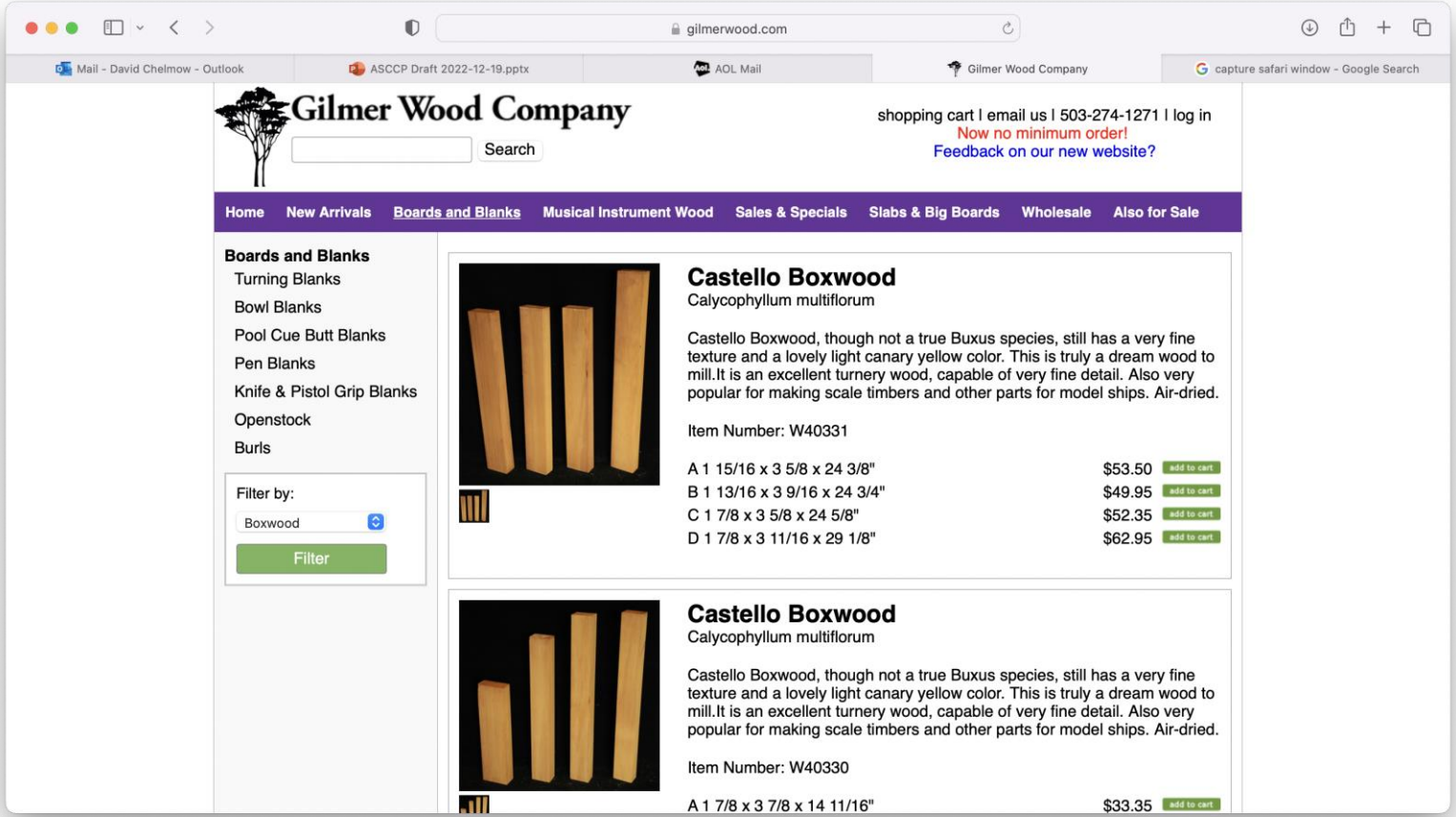
- Buy
  - Commercially available (e.g. Modeler’s Sawmill)
  - You pay for their labor - $340 for boxwood set for Syren model’s cheerful
  - Limited by their available wood types and sizes
- Compromise
  - Buy sheets and mill strips yourself
- Mill yourself
  - Fair amount of tooling
  - Never run out of size you need
  - Any choice of wood you want
  - Any size you need


IEAK!
CORP
Wooden
Ship
Model
SOME ASSEMBLY
REQUIRED
SINGER



Wood sources

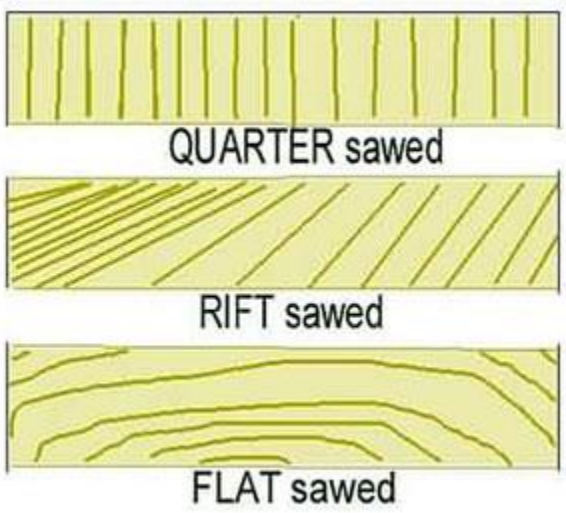
- Model Lumberyard
- Gilmer Wood
- Righteous Lumber
- Internet- different sources for different species



Wood thickness and how sawn

- 4/4, 6/4, 8/4 etc
- Divide first number by 4 to get approximate max thickness of finished board
- 8/4 – 12/4 best
- 4/4 end up cutting long way
- >12/4 generally $$ and not helpful for any reasonable model scale

- Quarter sawn?
- Can use most board – just orient so minimal grain on face that will show.



Milling: Step by Step

- Create two perpendicular flat sides*
- Slice billet
- Thickness sand
- Cut into strips

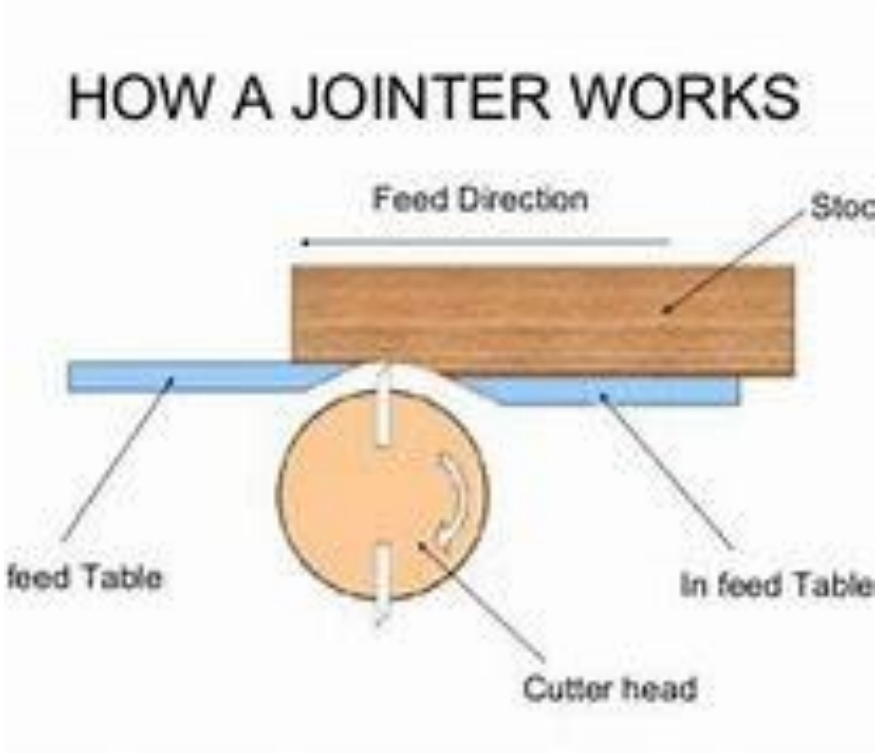
*somewhat optional

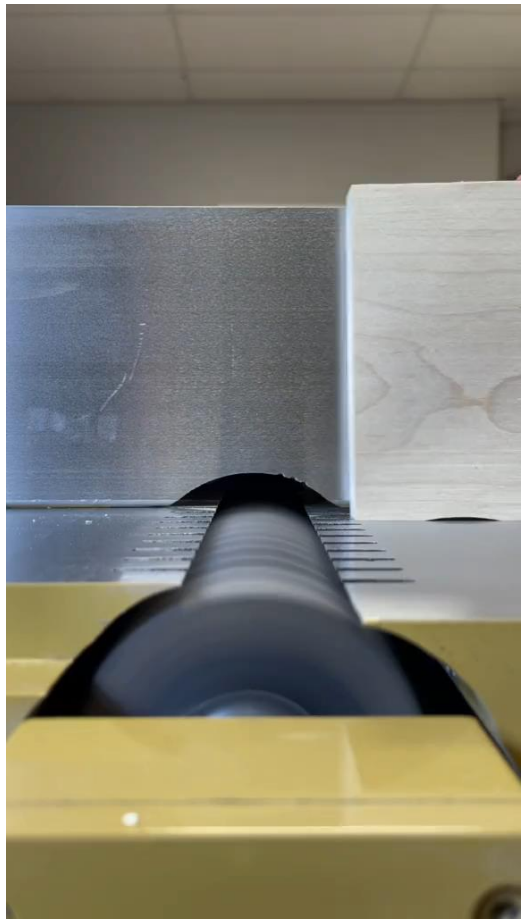
Two perpendicular sides

- Buy the wood that way
- Hand plane
- All sorts of sleds/jigs for running odd shaped wood through a band or table saw
- Jointer

Jointer

Jointer video





Board with two flat sides

Billets

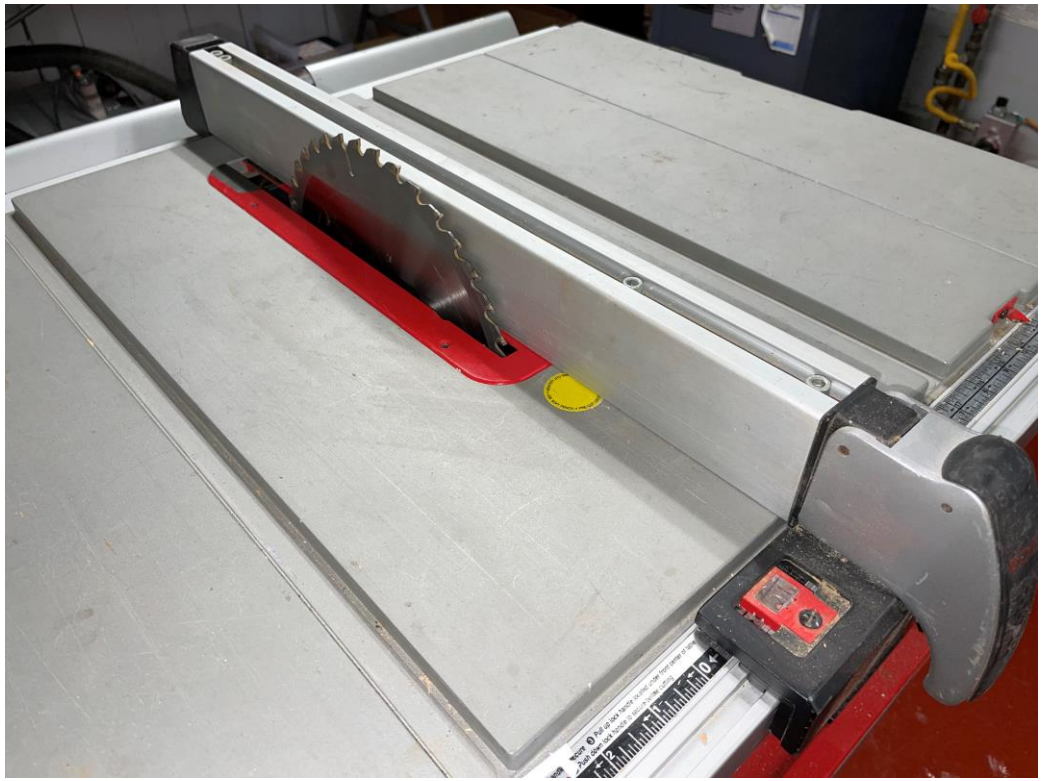
Table saw

- Can be used
- Thin kerf rip blade
- Scary
  - Blade all way above table for thicker wood
  - 2 foot wood length means hands near blade
  - Lots of feather boards and push sticks

Band saw

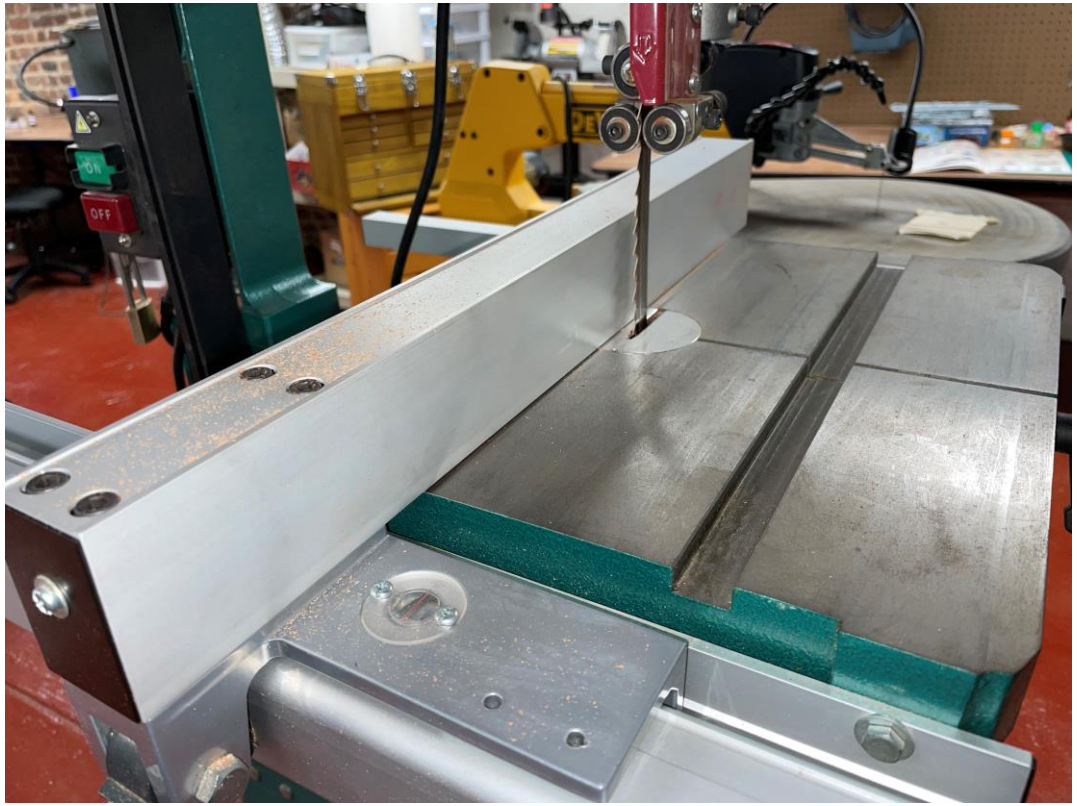
- Resaw blade
- Safer
  - Less exposed blade
  - Easier to keep body parts away from blade with short wood length
  - Thinner kerf

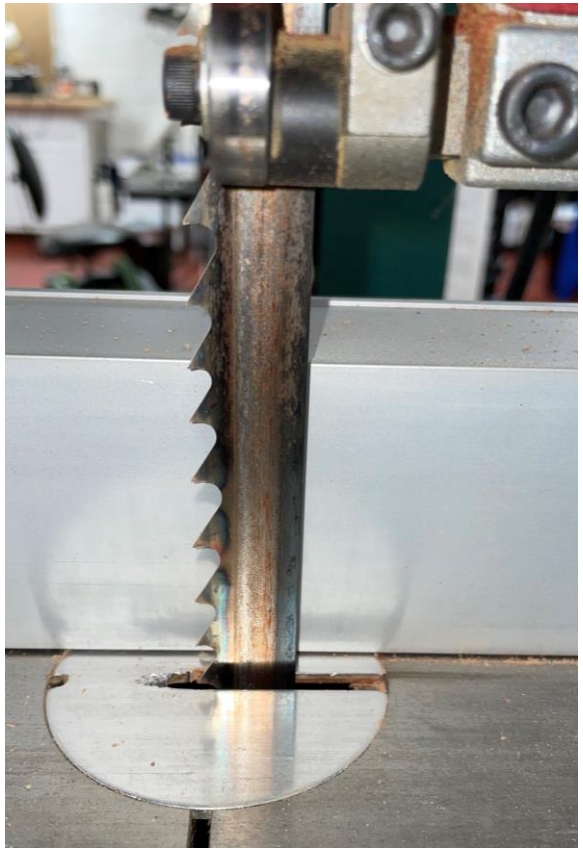
Table saw



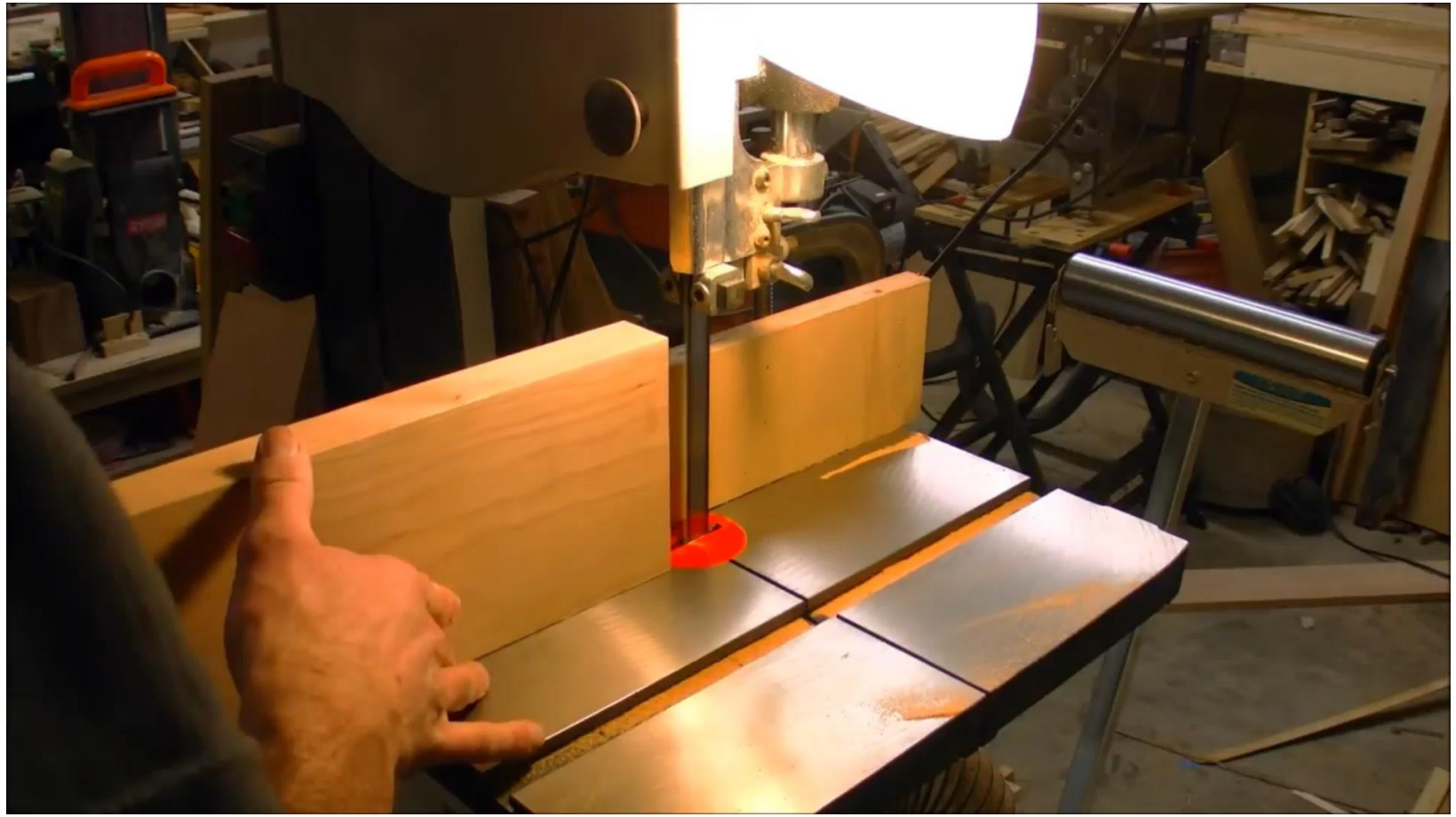

Freud
INDUSTRIAL
MADE IN ITALY
10"
5/8" Arbor
3/32"
THIN KERF
24T
ATB
HEAVY DUTY RIPPING
Rip Wood
Crosscut Wood
Chipboard
Plywood
Laminate
Ferrous
Not Recommended
DESIGN

Band saw

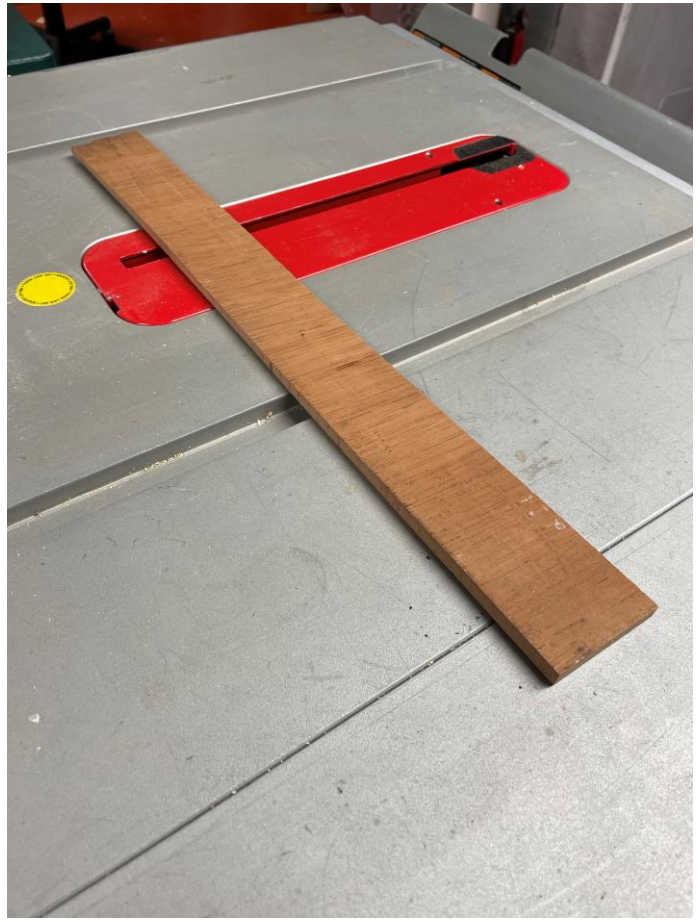


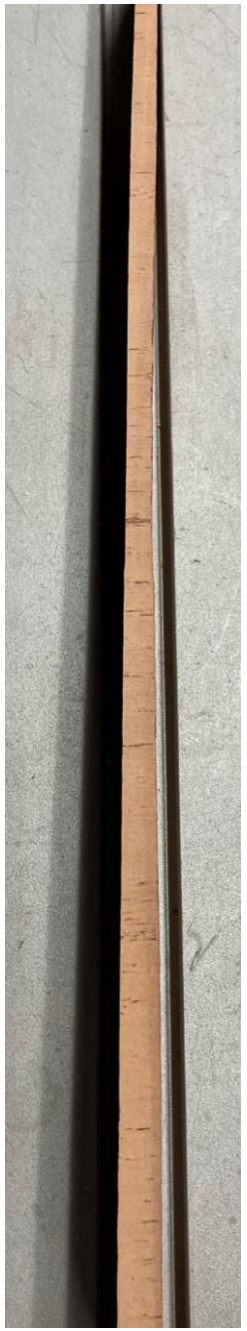


Band saw



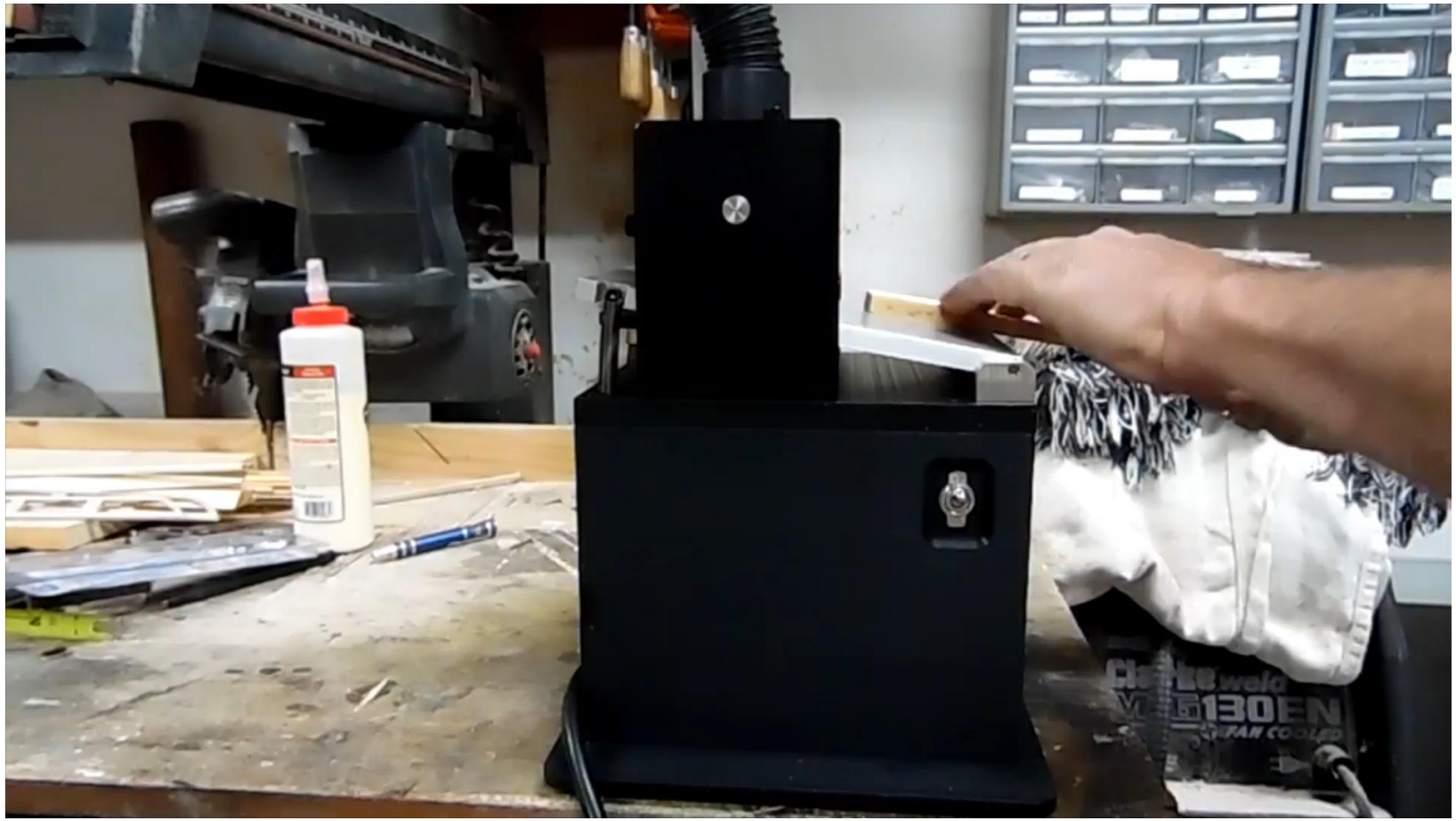
Rough billet after band saw





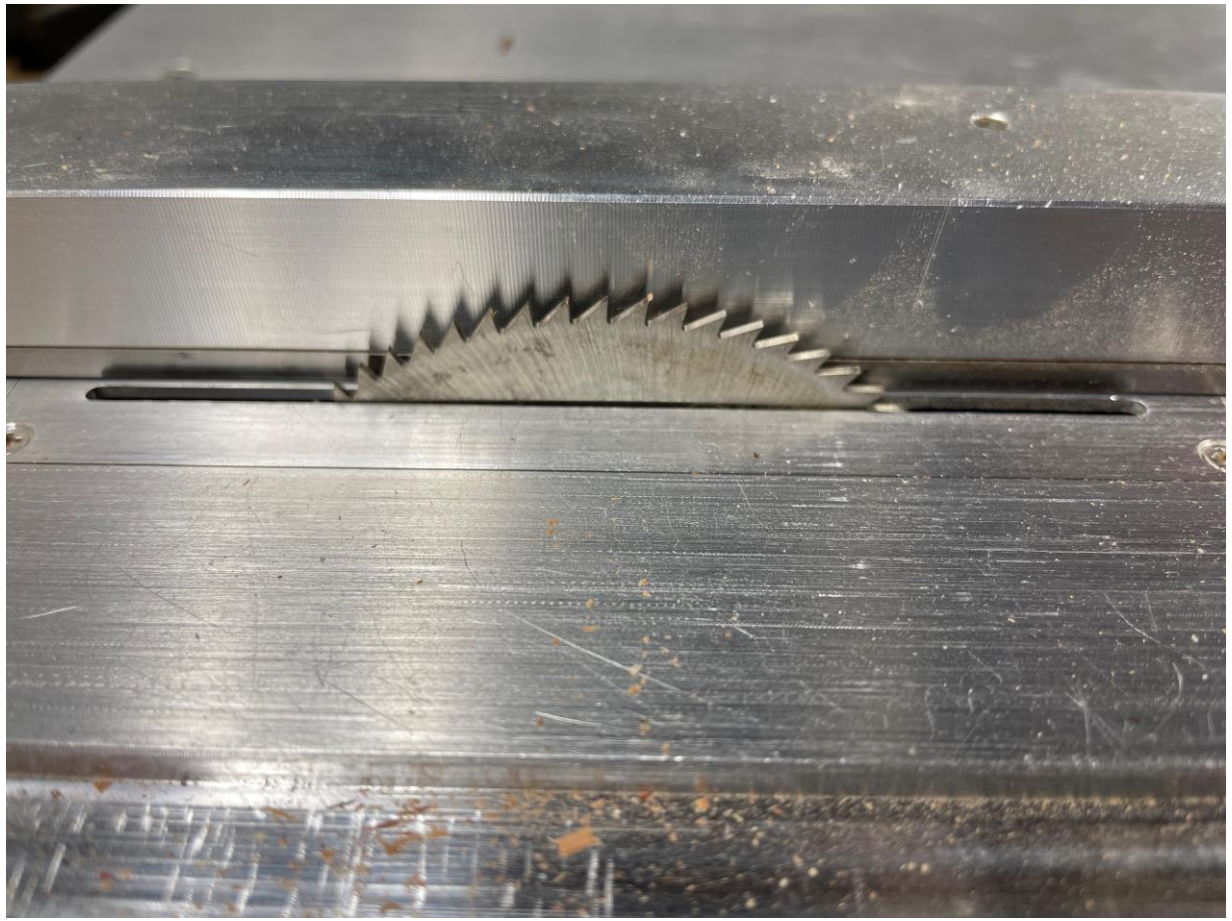
Thickness sander

Thickness sander

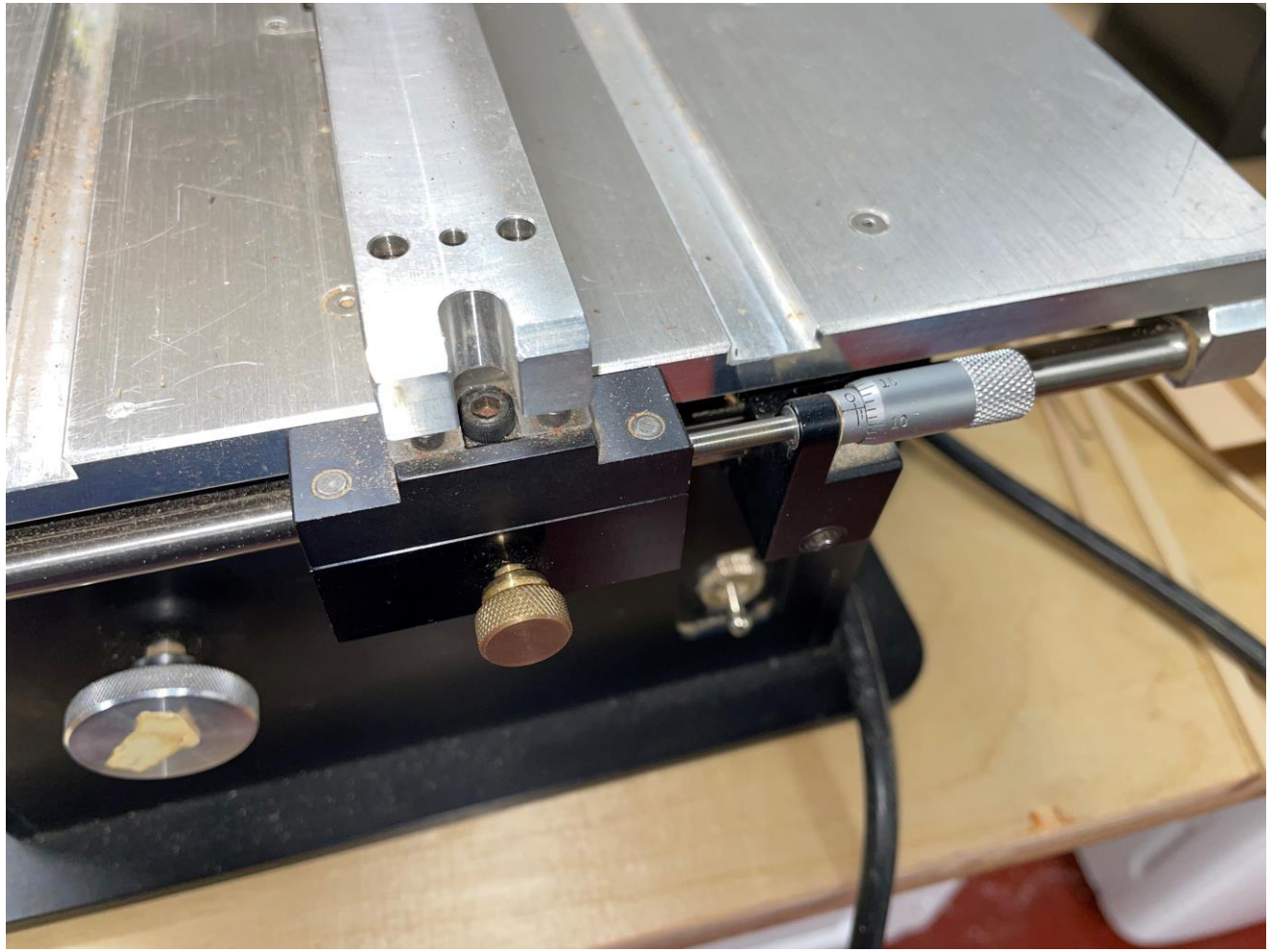


Sanded billet

Table saw



Micrometer adjustment



Blades

Byrnes Saw Operation Tips

As I mentioned above blade selection is dependent upon the thickness of stock to be milled. I will provide some guidelines on which blade that I use; however some species of wood tend to have chipout. If the lower edges of your cut have chips, then use the next finer pitch blade and that will eliminate the chipping. Another factor to consider is blade deflection. If the blade is too thin, it will tend to deflect as you are cutting which results in strips that are inconsistent in width.

For sheet stock above 3/16" or 4.5mm: Use the I-293 .040 kerf blade. Actually you can use this blade on thinner stock but it has a thicker kerf (more waste) and a few less teeth than the I-292 blade (chipout sooner with thinner stock)

For stock between 3/32" (3mm) - 3/16" (4.5mm): Use I-292 .030 kerf blade. If there is chipout around 3/32", go to the #99 blade

For stock between 3/64" (1mm) - 3/32" (3mm): Use #99 170T blade. Main change in blade is the finer pitch

For stock thinner than 3/64" (1mm): Use #100 224T blade.

I also have the 4" dia version of the .040 kerf blade as I-293 above and sometimes use it for thick cuts, but mainly I just use the I-293. The 4" version is supplied with the Byrnes tilting table accessory.

Ebony is very hard on blades, so I have a dedicated set of those blades just for ebony.

Blade Height: Set blade about 1/16" above top of material

Wood Orientation: In most cases if I am milling 1/16" x 1/8" strips, then I will mill

Milled scale wood