

Canons Tools & Parts (1)

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For assembly details see: <https://chrysalis-foundation.org/musical-mathematics-pages/forster-canon>

In clear bag, for the bridge/carriage assemblies: blue custom-made E-A-R ISODAMP C-1002 washers. See p. 3.

In clear bag, for the Delrin bridges: #8 × ¾ in. stainless steel flat head tapping screws.

For the bridge plates: 10-32 × ¾ in. black oxide button head cap screws (high-quality: MSC #75459420) and hex nuts.

For the bridge/carriage assemblies: H/M Canon: 4-40 × 1.0 in. black oxide socket head cap screws. See p. 3.

For the bridge/carriage assemblies: Bass Canon: 4-40 × 1¼ in. black oxide socket head cap screws. See p. 3.

Four rosewood nut lifters and one ebony nut lifter. See p. 11.

In clear bag, ¼-20 stainless steel soundboard support post fasteners and washers. See p. 5.

Extra black anodized aluminum bridge plates.

Nine extra Harmonic/Melodic Canon bridge/plate assemblies.

Six extra Bass Canon bridge/plate assemblies.

Extra gold anodized Harmonic/Melodic Canon and Bass Canon aluminum carriages.

Several kinds of ball-end hex bits: ⅛ in. for the #10 bridge plate cap screws, and ⅜ in. for the #4 carriage cap screws.

Pin vice with a 4-40 spiral pointed tap for chasing — if needed — the threads of the E-Z LOK inserts. See p. 2.

Custom-made screwdriver for the twenty brass machine screws that fasten the two teak sides to the instrument.

In clear bag, extra ground-to-length and unground 4-40 E-Z LOK inserts. See p. 2.

Three extra ½-13 hand knobs for fastening the 1.5 in. × 1.5 in. aluminum tube rails to the stand; one tuning gear crank.



Canons (2)

From left to right:

H/M Canon drilled Delrin bridge blanks with a height of ≈ 1.40 in.

Bass Canon drilled Delrin bridge blanks with a height of ≈ 1.410 in.

Three custom tools for holding and cutting Delrin bridge blanks at the band saw.

Bridge-to-plate #8 \times $\frac{3}{4}$ in. stainless steel flat head tapping screws.

In clear bag: E-Z LOK (formerly: Rosan, Inc. #RNS102SB6) steel knife thread inserts with internal 4-40 machine screw threads.

To fasten the carriages to the soundboards, I epoxied these inserts into the soundboard ribs.

See: <https://chrysalis-foundation.org/musical-mathematics-pages/forster-canon>

To reduce weight, a jig for holding and grinding nine inserts to half their original length.

Aluminum dovetail track samples.

H. H. Smith #9180 nylon inserts for lining soundboard carriage holes.

Thread-boring hand tool for holding Delrin bridges while sanding and polishing.

Nut driver for tightening nuts of Delrin bridge blanks holding tools.

Bridge, plate, and carriage drilling jigs.



Canons (3)

Extra and complete carriage/bridge assemblies: two different long carriage lengths with high bridges and dark gold anodizing for the Bass Canon.

Extra and complete carriage/bridge assemblies: two different short carriage lengths with low bridges and light gold anodizing for the Harmonic/Melodic Canon.

Extra long and short carriages.

Assemblies include blue custom-made E-A-R ISODAMP C-1002 thermoplastic washers.

For information about the E-A-R material, see [Glassdance_Components_Manual-1.pdf](#), p. 2.



Canons (4)

Harmonic/Melodic Canon: mounted in sets of 4; one set of 3 plus one cut apart.

Bass Canon: mounted in sets of 3.

48 extra sets of 3 = 144 individual gears.

No brand name.



Canons (5)

From left to right:

Three soundboard height gauges for measuring the distances between the canon ribs and the canon bottoms;
gauges include wing nuts used to lock the coupling nuts.

Saw frame with 0.019 in. diamond wire saw for Harmonic/Melodic Canon bridge notches only! Plus one extra wire saw.

Saw frame with 0.028 in. diamond wire saw for Bass Canon bridge notches only! Plus one extra wire saw.

Three extra Bass Canon soundboard support post flanges.

Custom-made aluminum wing nut wrench.

Combination wrench: $\frac{3}{8}$ for the stainless steel post coupling nuts.

Combination wrench: $\frac{7}{16}$ for the stainless steel post hex nuts.

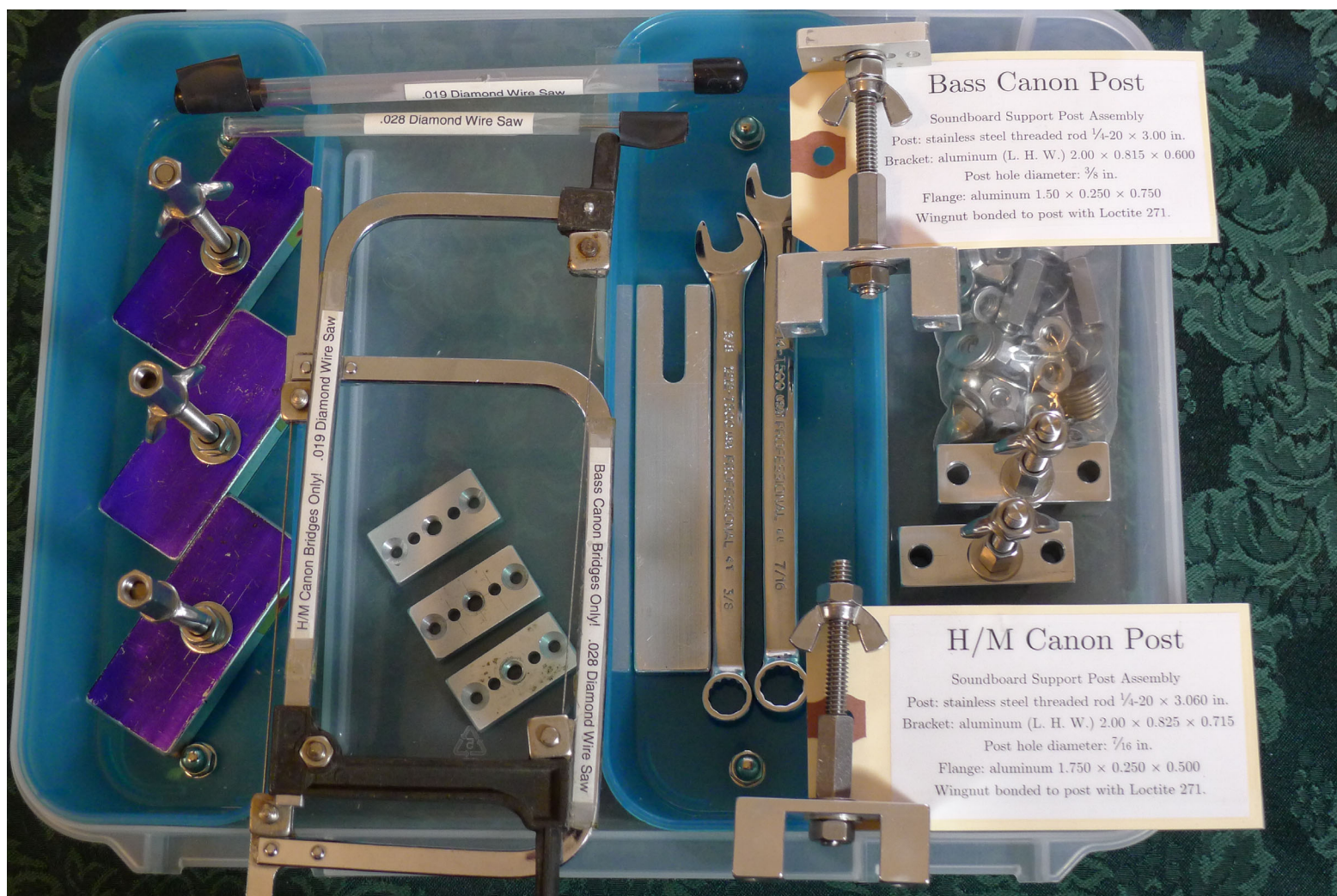
One extra Bass Canon soundboard support post assembly: $\frac{1}{4}$ -20 stainless steel threaded rod post, flange, bracket, and fasteners.

Three extra H/M Canon soundboard support post assemblies: $\frac{1}{4}$ -20 stainless steel threaded rod posts, brackets, and fasteners.
(No extra H/M Canon flanges in the box.)

(1) For low-tension open string tunings, connect only one (of twelve) H/M Canon posts to the brackets.

(2) See special installation instructions in: [Canons_Soundboard_Support_Posts_Manual.pdf](#)

(3) Also, see special installation instructions inside the back end of the H/M Canon sound box.



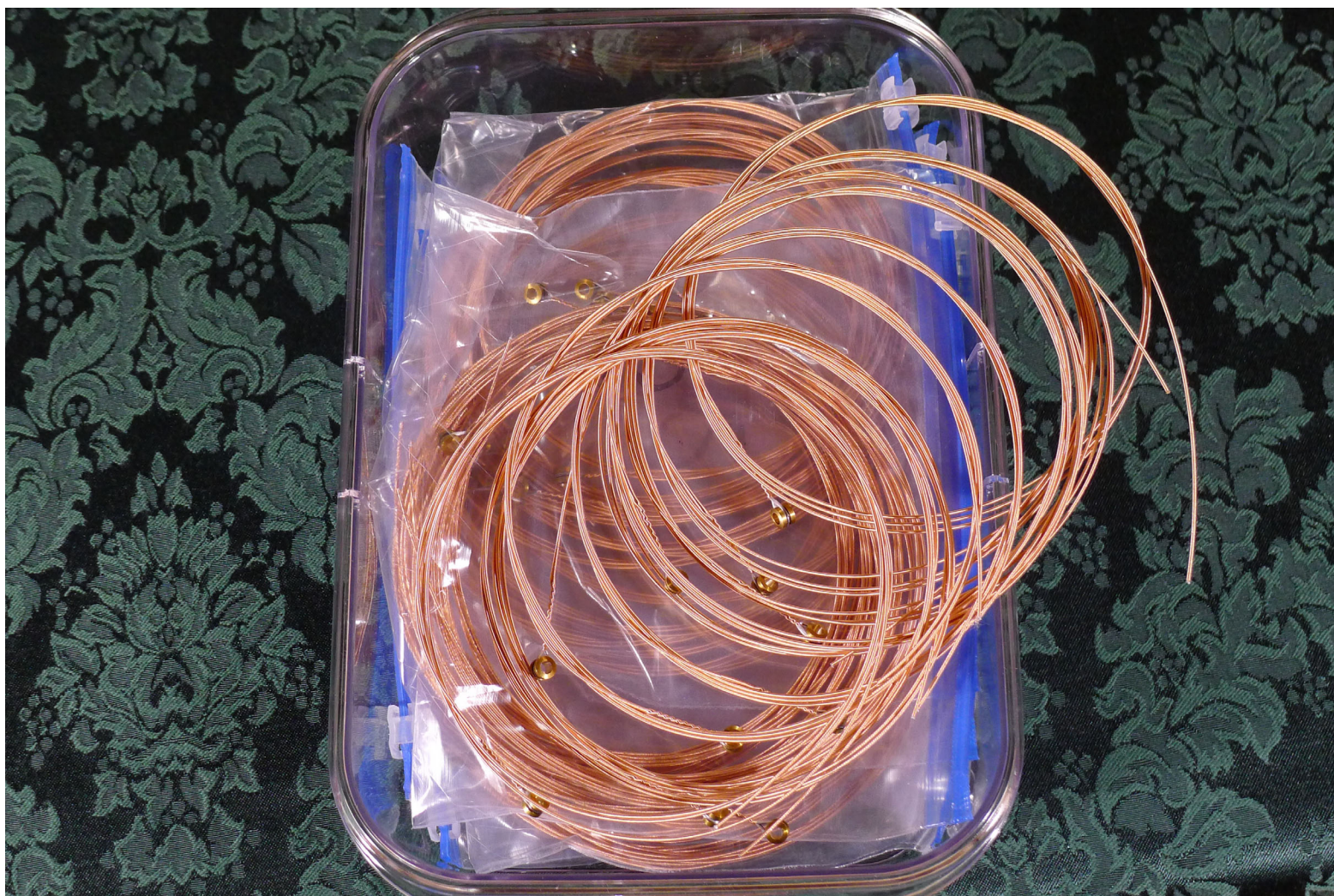
Canons (6)

Bass Canon Wound Strings

March 2023

Bass Canon wound strings backup set. 72 strings + 8 extra strings = 80 strings total.
Strings stored in eight zip lock plastic bags inside a Rubbermaid Brilliance No. 2024351 airtight container.

Wound string diameter dimensions: 0.022 in. music wire core; 0.007 in. phosphor bronze wrap $\times 2 = 0.014$ in.;
0.002 in. nylon fiber bedding $\times 4 = 0.008$ in. Grand total diameter: 0.022 in. + 0.014 in. + 0.008 in. = 0.044 in.



See: [String Winder](#)

See: [StringWinder_Operation_Manual-1.pdf](#)

See: [BassCanon_Customized_Looping_Machine_Manual.pdf](#)

Canons (7)

Bass Canon Core Strings

March 2023

Bass Canon core strings backup set. 80 strings + 9 extra strings = 89 strings total.

All music wire cores assembled with two brass ball ends per wire.

Strings stored with eight parchment paper separators inside a Rubbermaid Brilliance No. 2024351 airtight container.

Music wire diameter: 0.022 in.



Chrysalises and Canons Music Wire

Röslau music wire sizes:

Chrysalis I, left side, #6 – 0.016 in.

Chrysalis II, left side, #7 – 0.018 in.

Chrysalis I & II, right side, #9 – 0.022 in.

Chrysalis II, String No. 1, right side, #11 – 0.026 in.

Harmonic/Melodic Canon, #10 – 0.024 in.

Bass Canon, core wire of wound strings, #9 – 0.022 in.

Looping machine for plain strings: Chrysalis I and II, Harmonic/Melodic Canon, and Just Keys.

Customized looping machine for turning the brass ball ends of wound strings: Bass Canon.



E-A-R™ ISODAMP™ C-1002

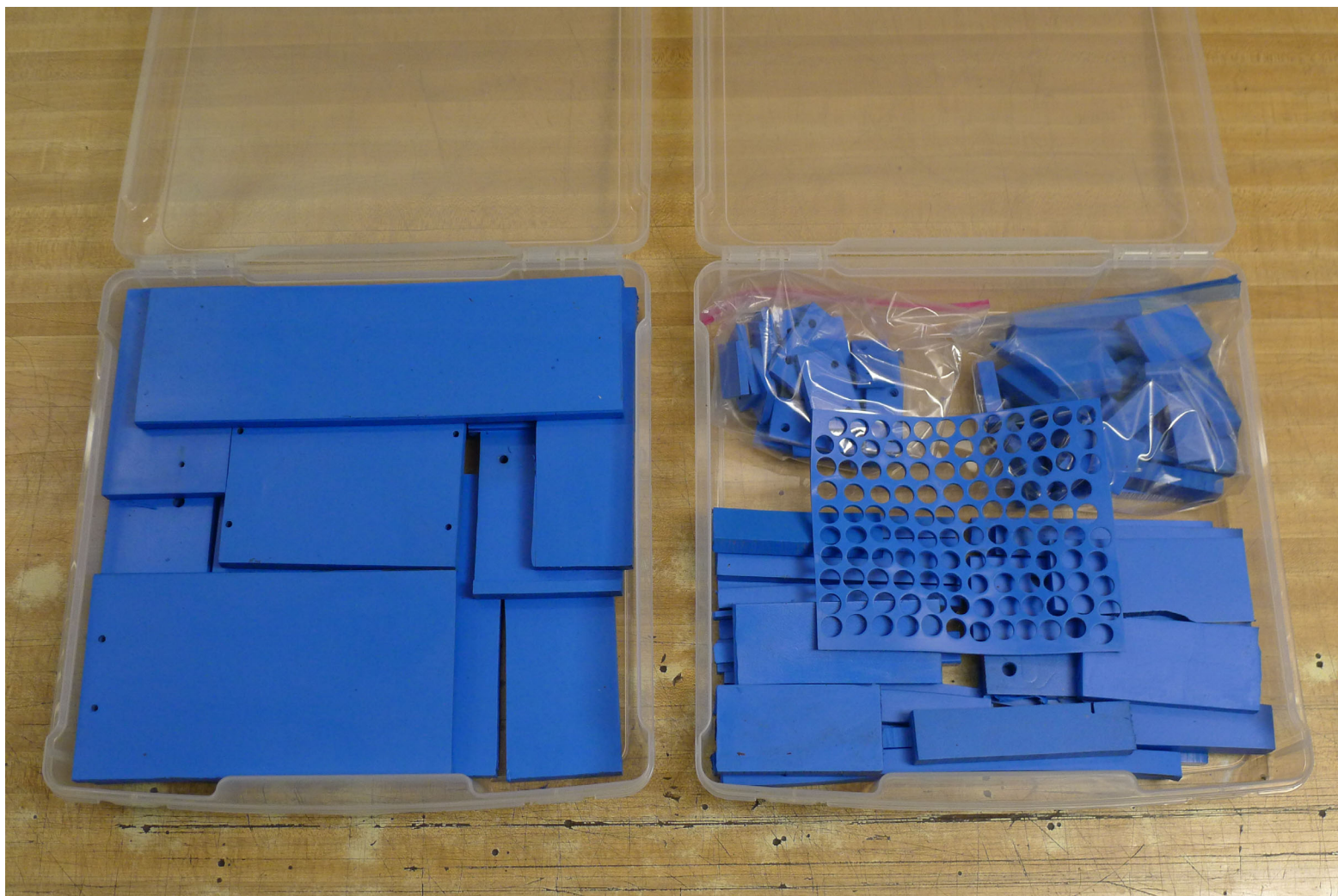
Glassdance, Canons, and String Winder

Two Boxes

E-A-R ISODAMP C-1002 is a thermoplastic material designed to absorb vibration and dampen — reduce or eliminate — structure-borne sound and noise.

<https://www.rathbun.com/e-a-r/damping-isolation#1>

I also use this vibration damping material under the machinery mounts of my band saw, drill press, milling machine, and air compressor.



Instrument Building Jigs & Extra Parts (1) ⁻¹⁰⁻

Chrysalis II, Glassdance, Canons, Bass Marimba

Honduras rosewood spoke for Chrysalis II.

Glassdance aluminum stem roller to check the runout of Sasaki crystal brandy snifters. When used with a surface gauge, this tool enables a tuner to verify an even removal of material from the rims of the glasses.
See [Glassdance_Components_Manual-1.pdf](#), p. 23.

Bass Canon and Harmonic/Melodic Canon jig for drilling aluminum plates.

One Chrysalis I soundboard spacer.

Chrysalis I and II jigs for drilling *blind pilot holes* into felt-covered brake pads; holes for #6 tapping screws ≈ 0.315 in. long.

Chrysalis I and II jig for grinding down thirteen $\#6 \times \frac{3}{8}$ in. flat head brake pad tapping screws to a length of ≈ 0.315 in.

Bass Marimba saddle jig for drilling holes into the upper aluminum tube rails; holes used to attach nut plates.

Bass Marimba jig for drilling holes into steel nut plates. Nut plates also used to secure linear bearing support rail sections on the String Winder.

Not in photo:

Chrysalis I and II jigs for bending the ends of brass (gold powder coated) soundboard brackets to 90° .

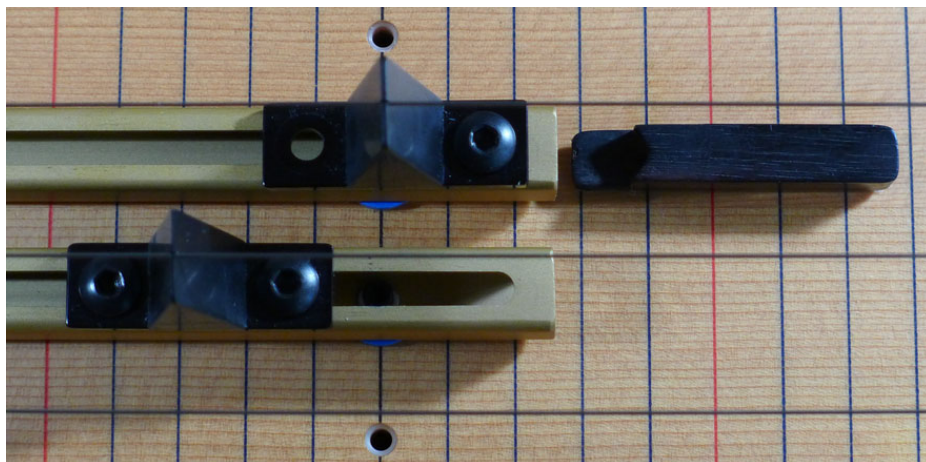
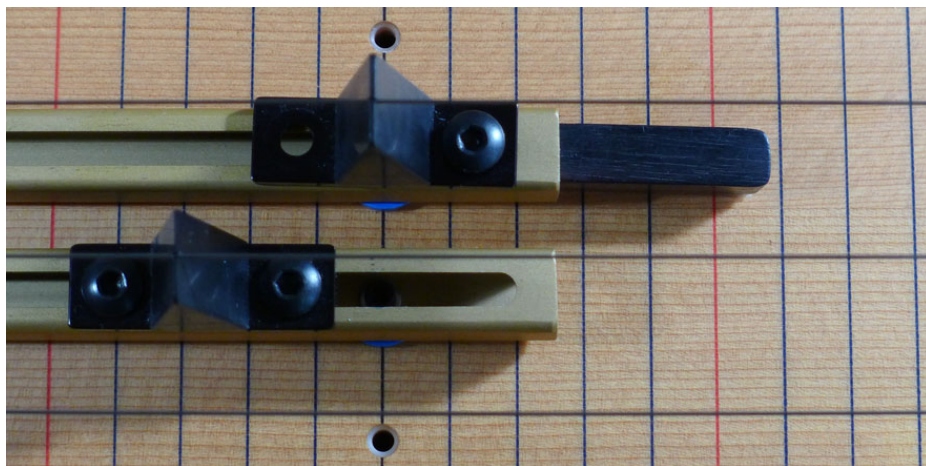
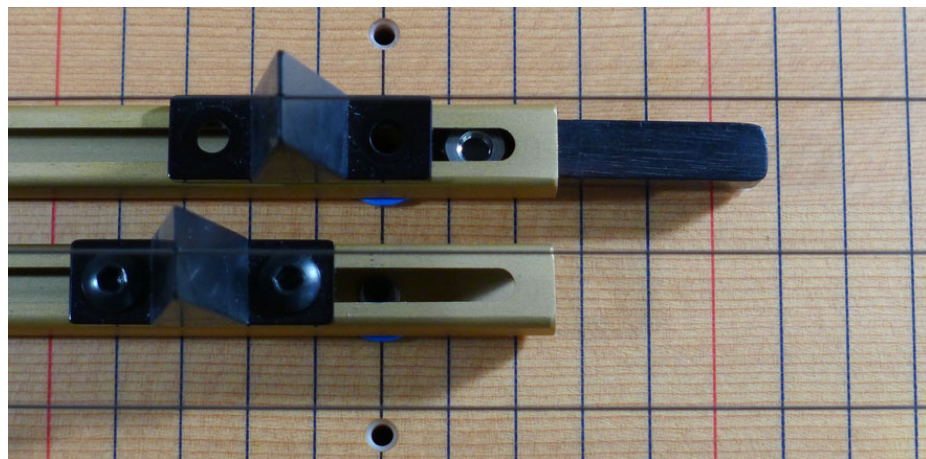
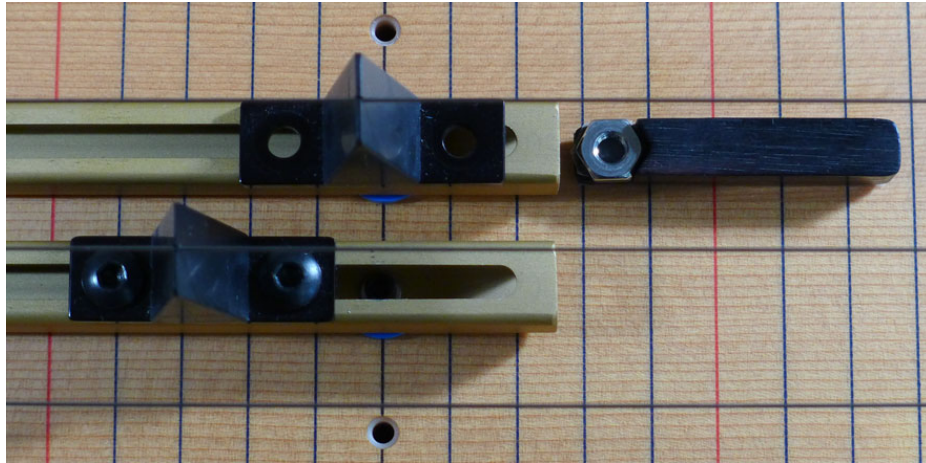
One grey modified plastic tube used as a jig for filing a slot into a maple dowel on the stand of Chrysalis I.

Two Honduras rosewood spokes.

Two extra Chrysalis I aluminum caster blocks.



Canons Bridge Nut Lifter



Bass Canon Looping Machine

Customized looping machine for turning the brass ball ends of wound strings.

See: [BassCanon_Customized_Looping_Machine_Manual.pdf](#)

