

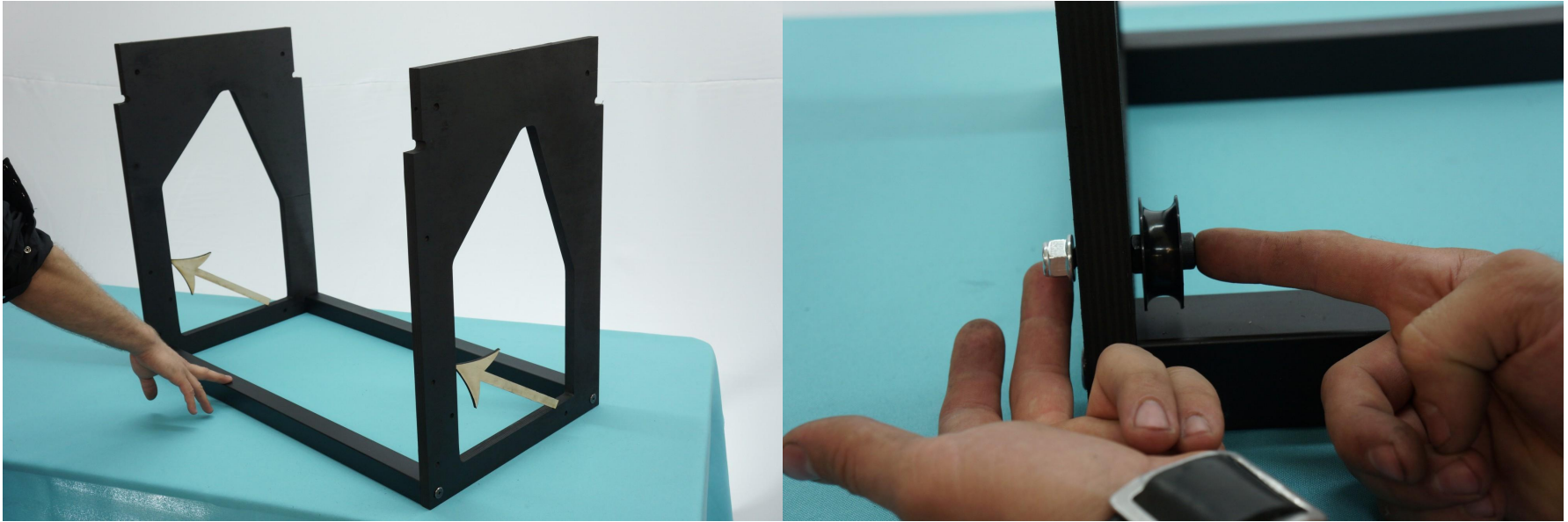
DIY BOOK SCANNER KIT: THE ARCHIVIST



0. PAINT YOUR PARTS (Picture 0a_DSC06648) To reduce glare, paint every wooden component black. We recommend using Rust-Oleum Painter's Touch 2x Ultra Cover Flat Black spray paint. Flat black latex paint applied with a brush is also OK. Wear an organic respirator like a 3M 52P71CC1-A.

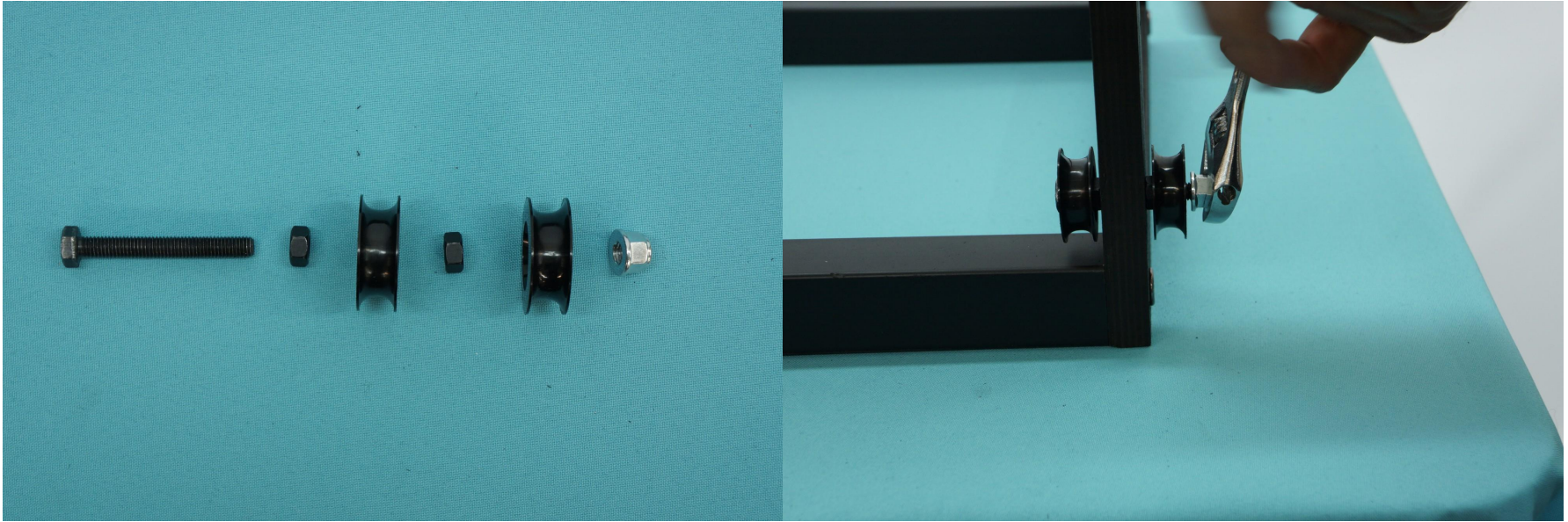


1. **ASSEMBLE BASE:** Attach the Base Bars (the thicker aluminum square bars) to a Side Plate with furniture bolts, as pictured. Finger tighten only. Attach the second Side Plate with furniture bolts, too. When you're confident that the base rests evenly, wrench-tighten the bolts until they're secure. Furniture bolts are turned with an Allen Wrench and have a very thin head.



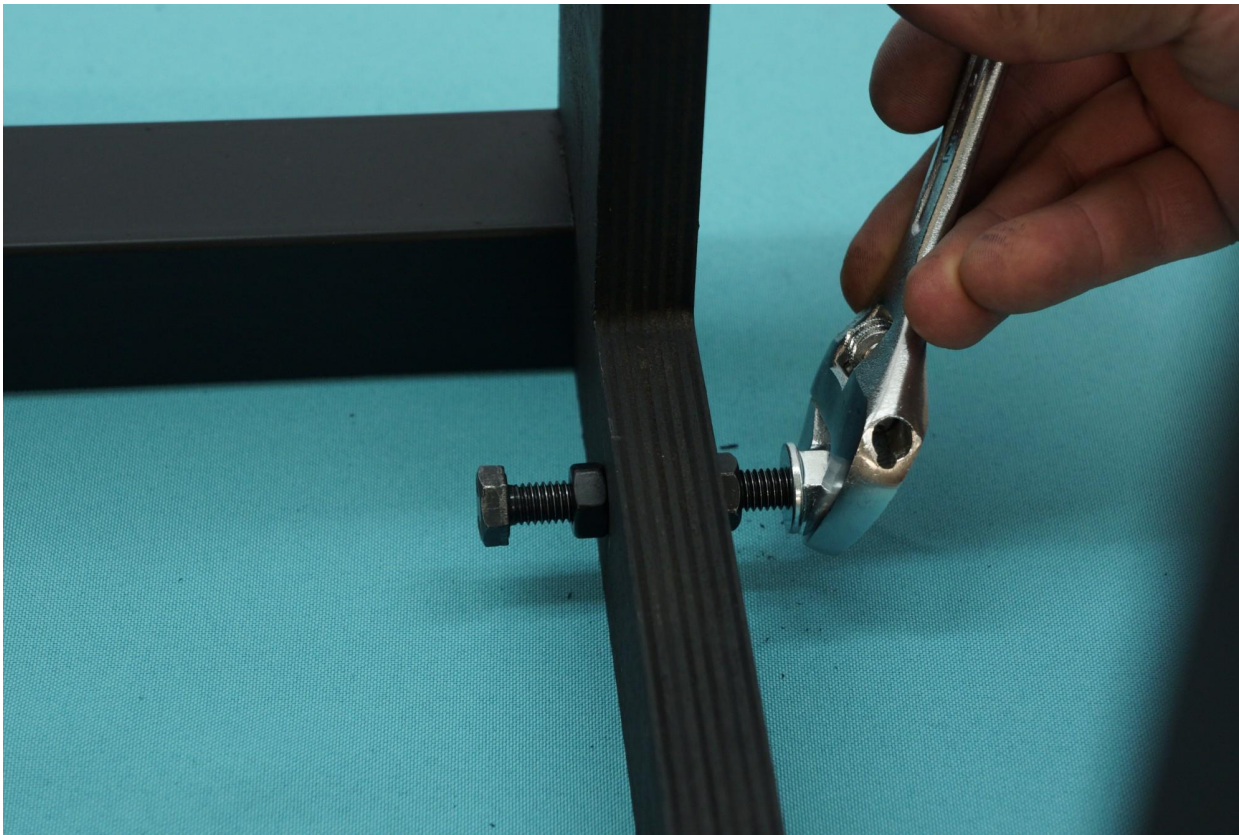
2. ASSEMBLE PULLEYS

2a. Orient the assembly as pictured. Insert a 40mm M8 bolt into a pulley, then spin a nut onto the bolt so it firmly contacts the pulley. Attach the pulley to the left side plate and cap it with an M8 flange nut. Tighten with a wrench.



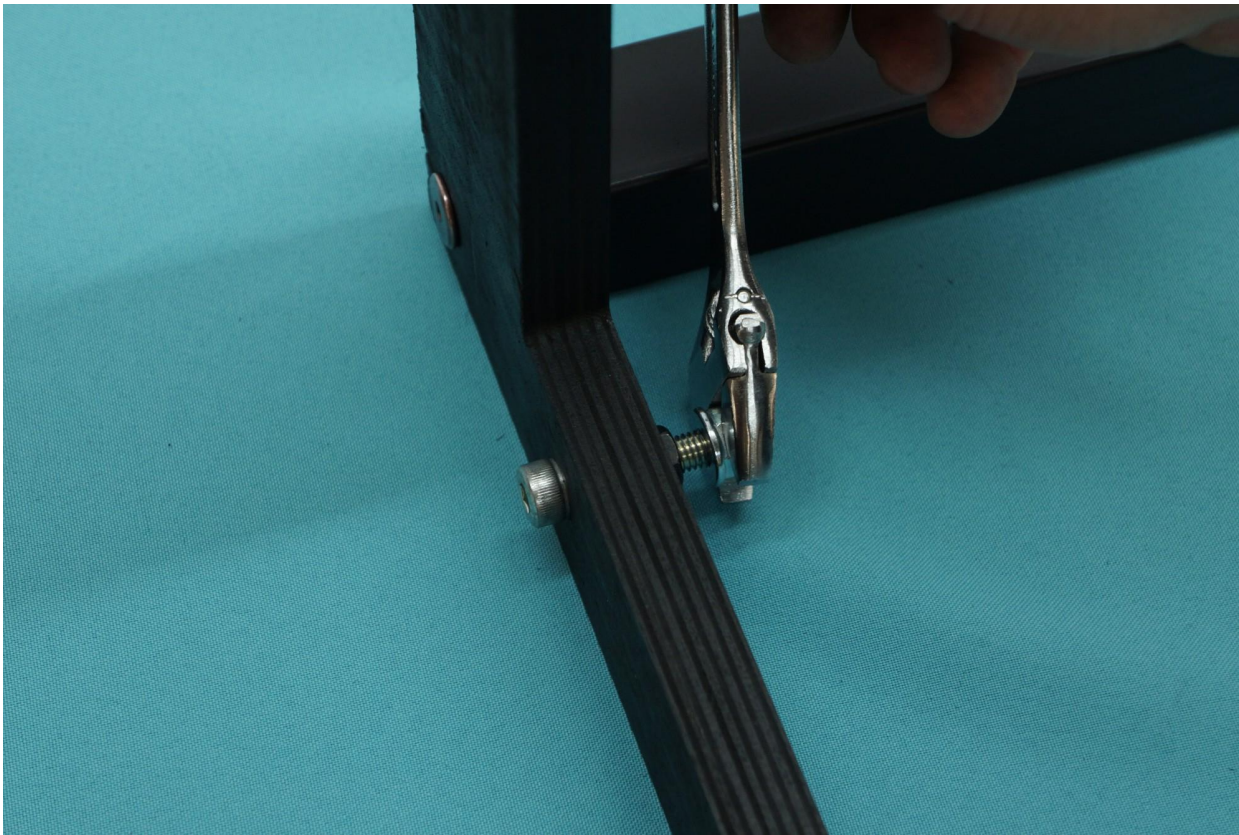
2. ASSEMBLE PULLEYS

2b. The right side needs a pulley on the inside and outside of the side plate. Start with a 60mm M8 fully-threaded hex bolt. From left to right, your delicious pulley sandwich will go: Bolt > Pulley > Nut > WOOD > Nut > Pulley > Lock nut. Tighten with a wrench when in place.



3. ASSEMBLE BUNGEE ATTACHMENT POINT

3a. Spin a nut onto a 60mm M8 fully-threaded hex bolt until there's about $\frac{1}{4}$ inch between the nut and the bolt head. Insert through the inside of the Right Side Plate. Secure with a nut. Cap the bolt with a flange nut, leaving about $\frac{1}{4}$ inch between the flange nut and M8 nut.

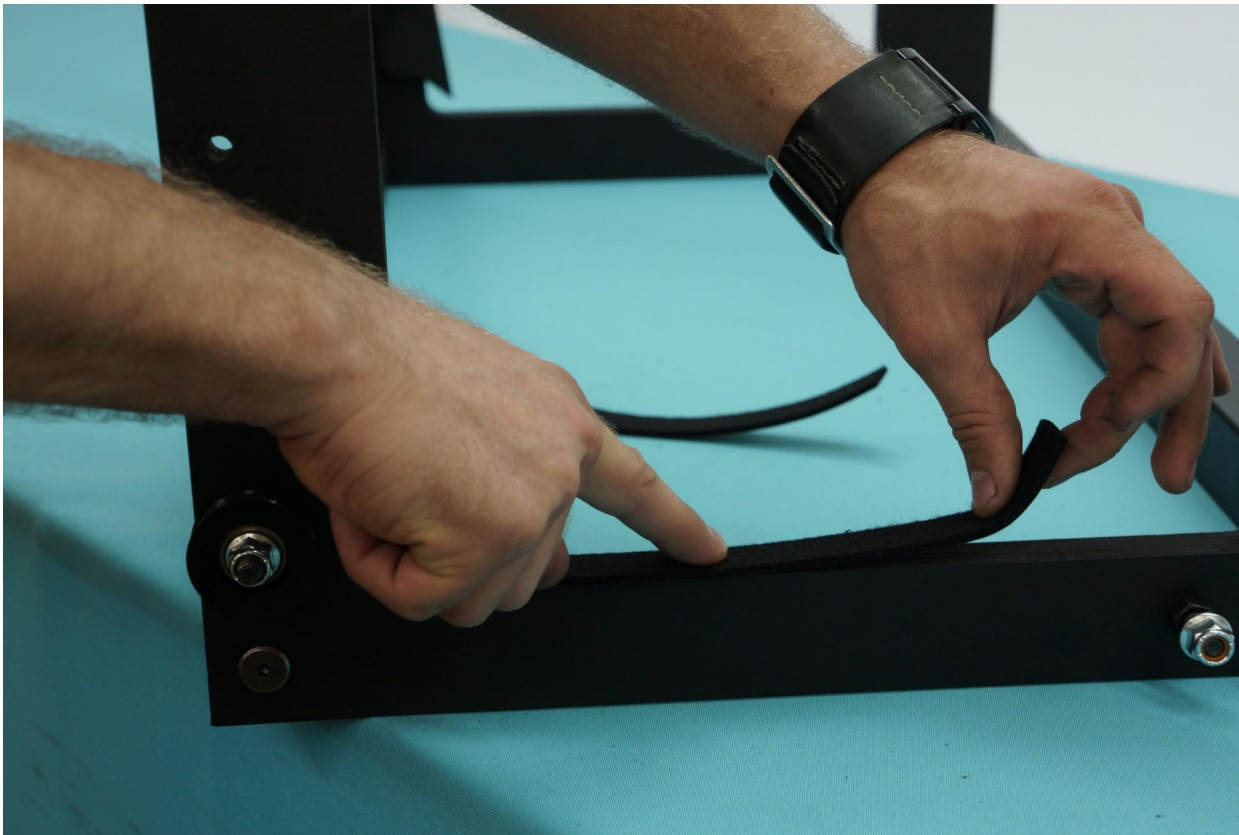


- 3b. The left side only needs an attachment point on the inside. Spin a nut onto a 40mm M8 bolt. Insert through the outside of the Left Side Plate. On the inside, secure with a flange nut, leaving $\frac{1}{4}$ inch between the flange nut and the wood.



4. BOLT ON CRADLE LIFT STOP

With a 40mm M8 bolt through the outside of the Left Side Plate, attach the Cradle Lift Stop. Secure with a wingnut. Tighten the wingnut so the Cradle Lift Stop sticks firmly in place but still rotates out of the way.



5. APPLY FELT

Apply felt to the inside relief of the Side Plates: it's gentler on your books and highly recommended.



6. ASSEMBLE CRADLE RUNNERS

Bolt the Cradle Runners to the Lifters with furniture bolts. Use a flat surface to ensure it's even. Place the assembly into the the Scanner Base so the Lifters are sitting in the big relief holes in the Side Plates as pictured.

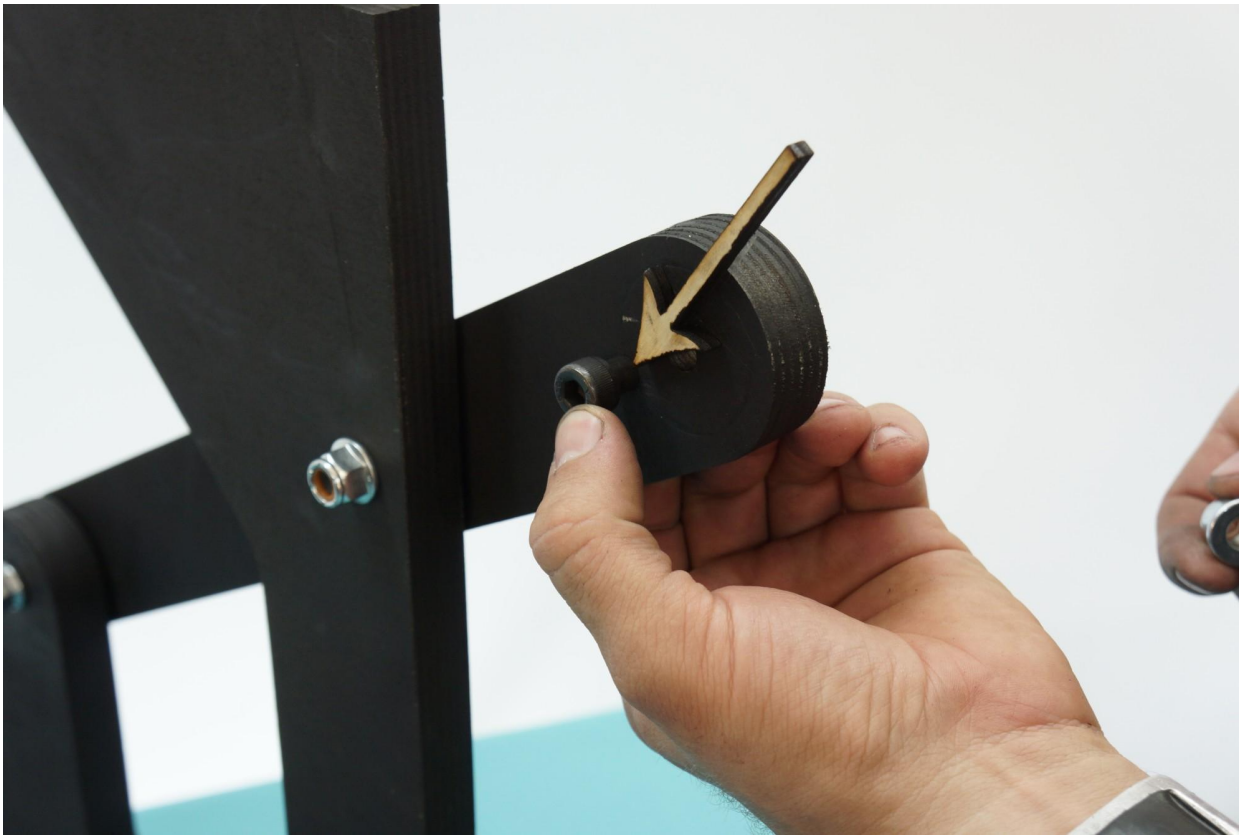


7. ATTACH LIFT ARMS

7a. Pop the F608ZZ flange bearings into both sides of all four lift arms. Finger-force should be good. Otherwise, persuade them with a deadblow hammer or Physics textbook. If you're building without the kit, consider using ordinary skate bearings, which are easier to find.



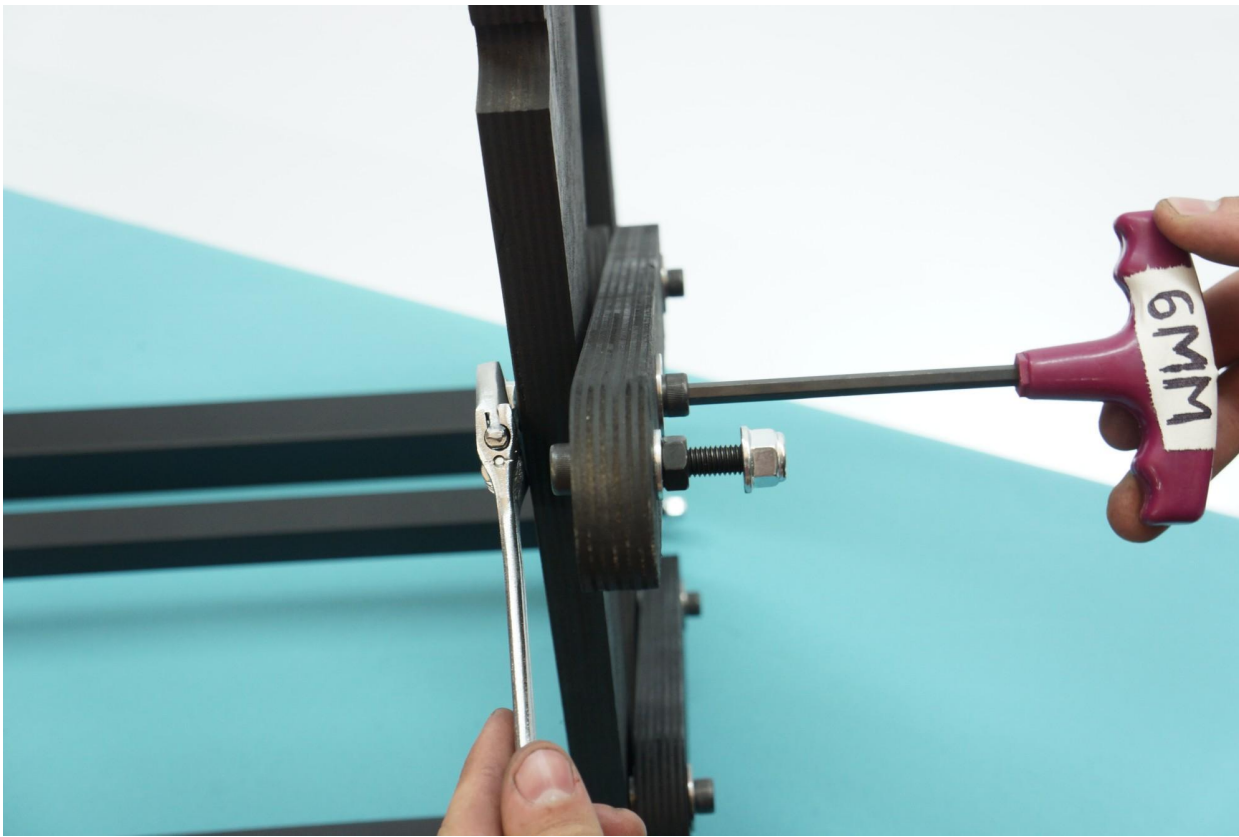
7b. Put 50mm socket caps through both bearings of a Short Arm. Add a washer to the ends of the protruding bolts. Connect the Short Arm to the Lifter and Side Plate. Secure the bolts with flange nuts - just finger-tight for now.



7c. Note: the Right Long Arm has an Attachment Point hole that the Left Long Arm doesn't. Attach the Right and Left Long Arms to their respective sides.



7d. Insert a 50mm socket cap into the Right Long Arm Attachment Point hole (the head of the socket cap will be on the inside of the scanner). Add a washer. Spin a nut to the base. Cap with a flange nut

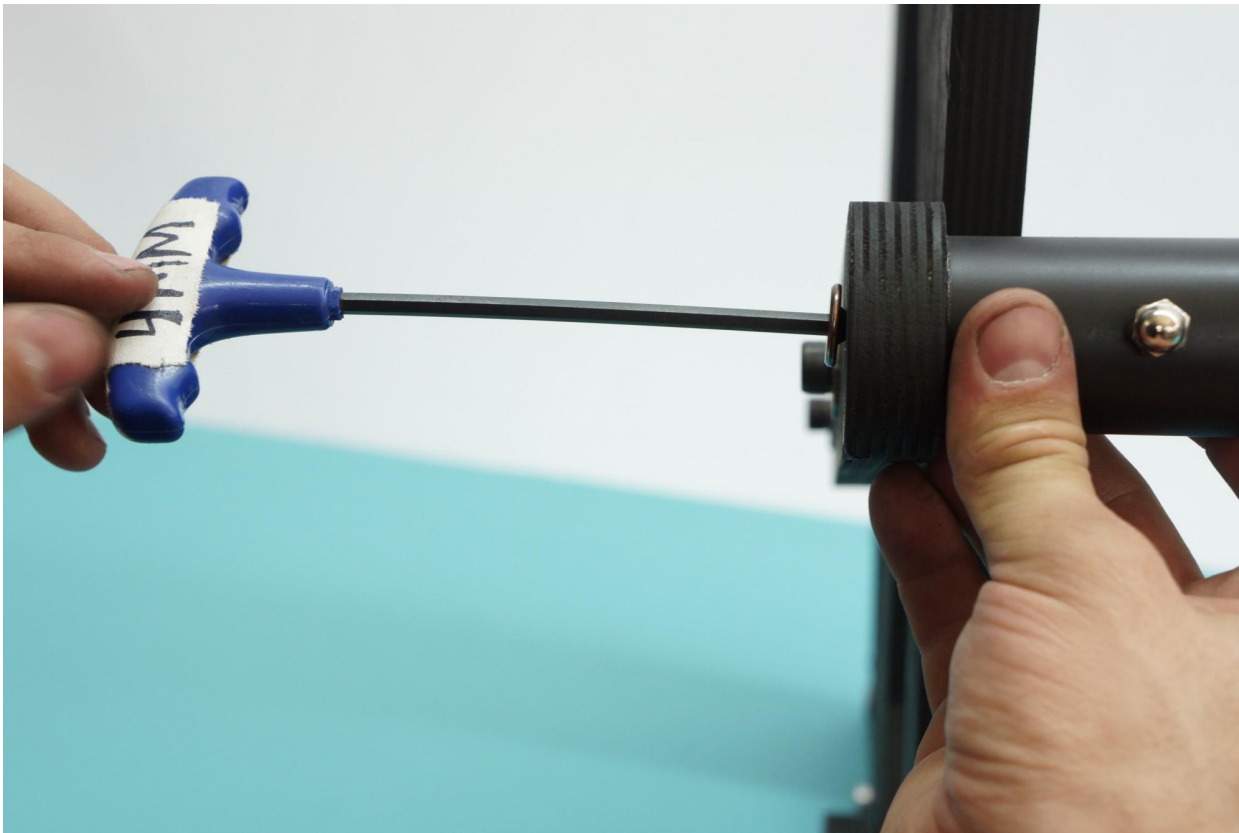


7e. Once all the arms are in place, tighten the flange nuts with a wrench. Be careful. Only tighten until they feel firm. It's possible to overtighten and put pressure on the bearings, locking them in place. Test the lift mechanism. It should feel easy and smooth. If it's crunchy or stiff, you've overtightened. Side-to-side slop means you've not tightened enough. (Of course, without the bungees attached, it'll feel heavy.)

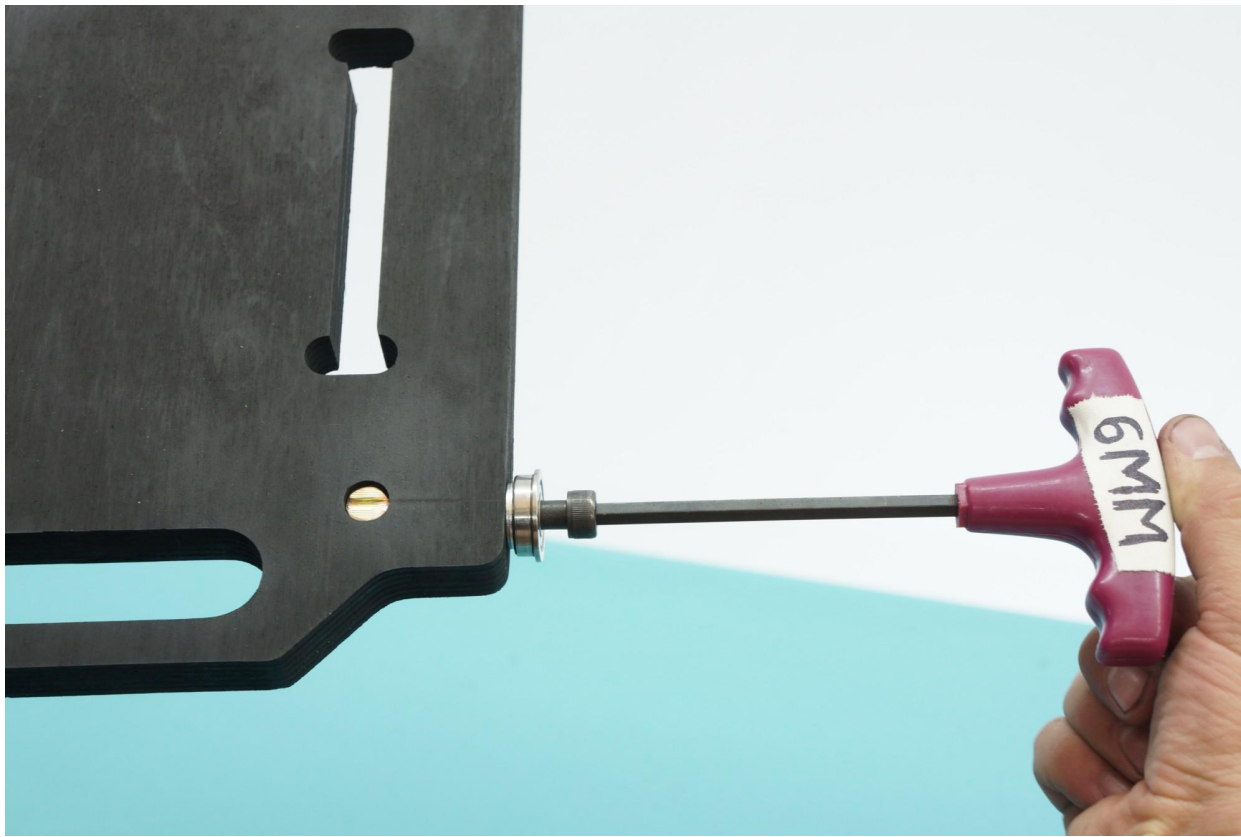


8. CONNECT LIFT HANDLEBAR

8a. Drop an M8 nut onto the head of two eyebolts. Insert those eyebolts into the notched side of the Handlebar. The eyes of the eyebolts should run parallel with the Handlebar. Secure the eyebolts with a nut. Cap with an acorn nut. Acorns keep the eyebolts from poking your hands. They're optional!

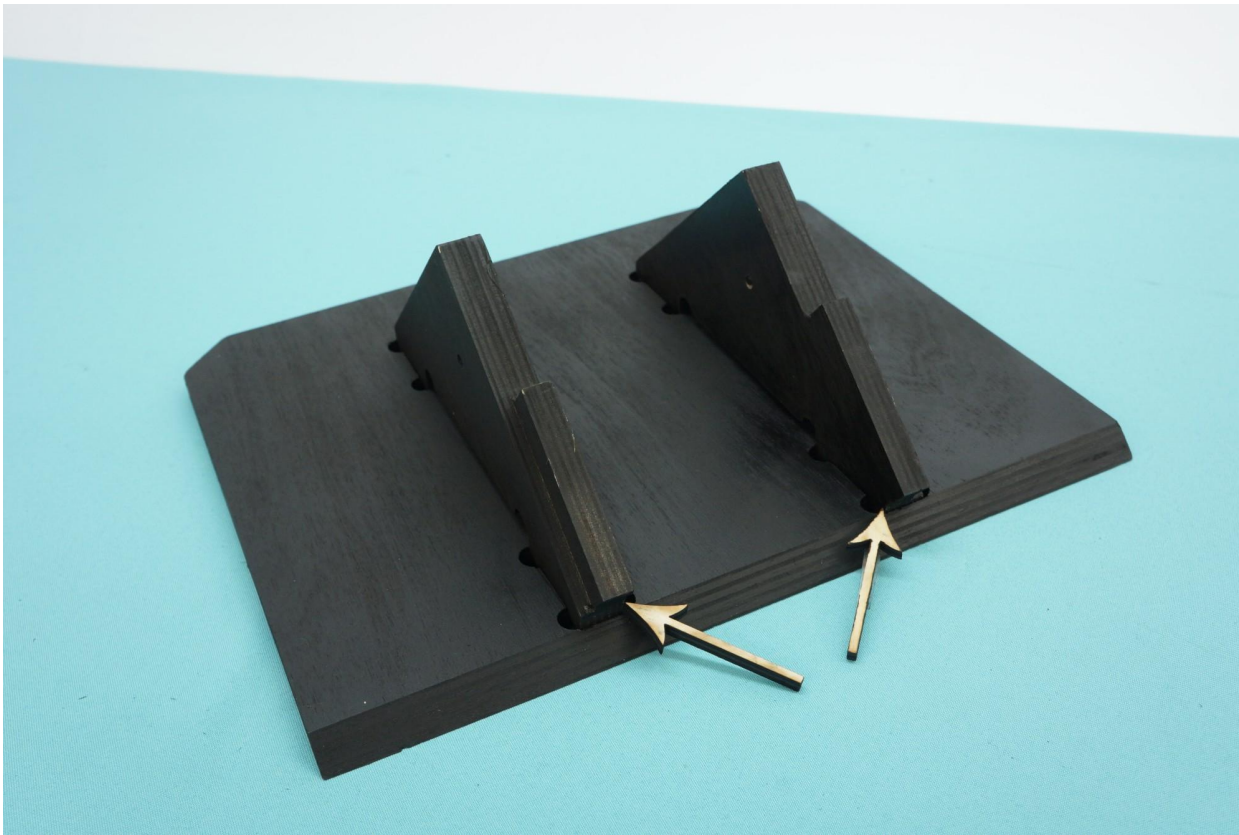


8b. Bolt the Handlebar to both Long Lift Arms with furniture bolts. (The acorns face out, toward the user.)



9. ASSEMBLE CRADLE BASE

Prepare an M8 Bolt by adding a flange bearing and then a washer. Insert a cross dowel into a Cradle Base dowel hole. Line up the slot on the dowel head with the corresponding bolt hole. Insert the prepared M8 Bolt. It might be a little tricky to start. Tighten a quarter turn past finger tight. Repeat to add the other three bearings to the base. If the Cradle Base rests unevenly like an old restaurant table, just loosen the bolts, sit the base on a level surface, and retighten.

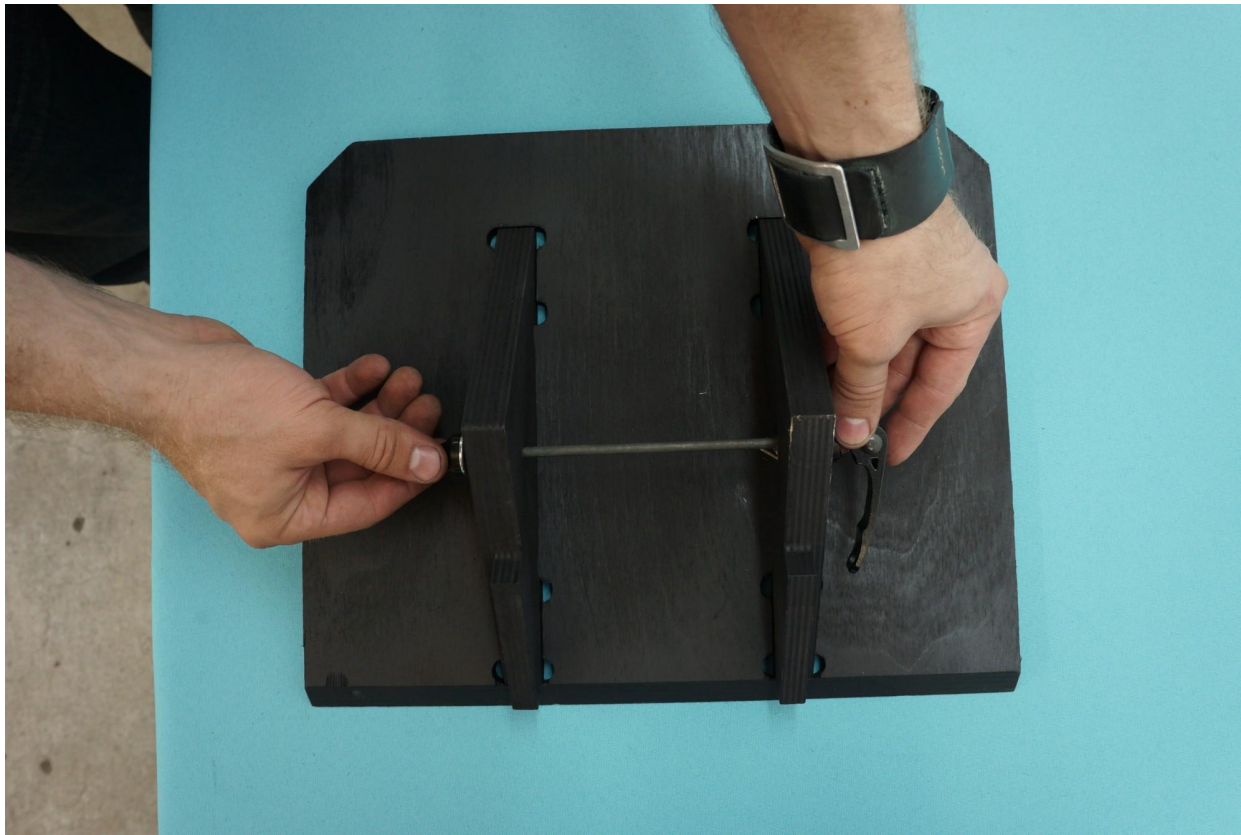


10. ASSEMBLE CRADLE LEAVES

10a. Fit the Cradle Angles into the Cradle Leaves as pictured. The tabs on the Angles should face inside, toward each other. (Picture 10a_DSC07404)

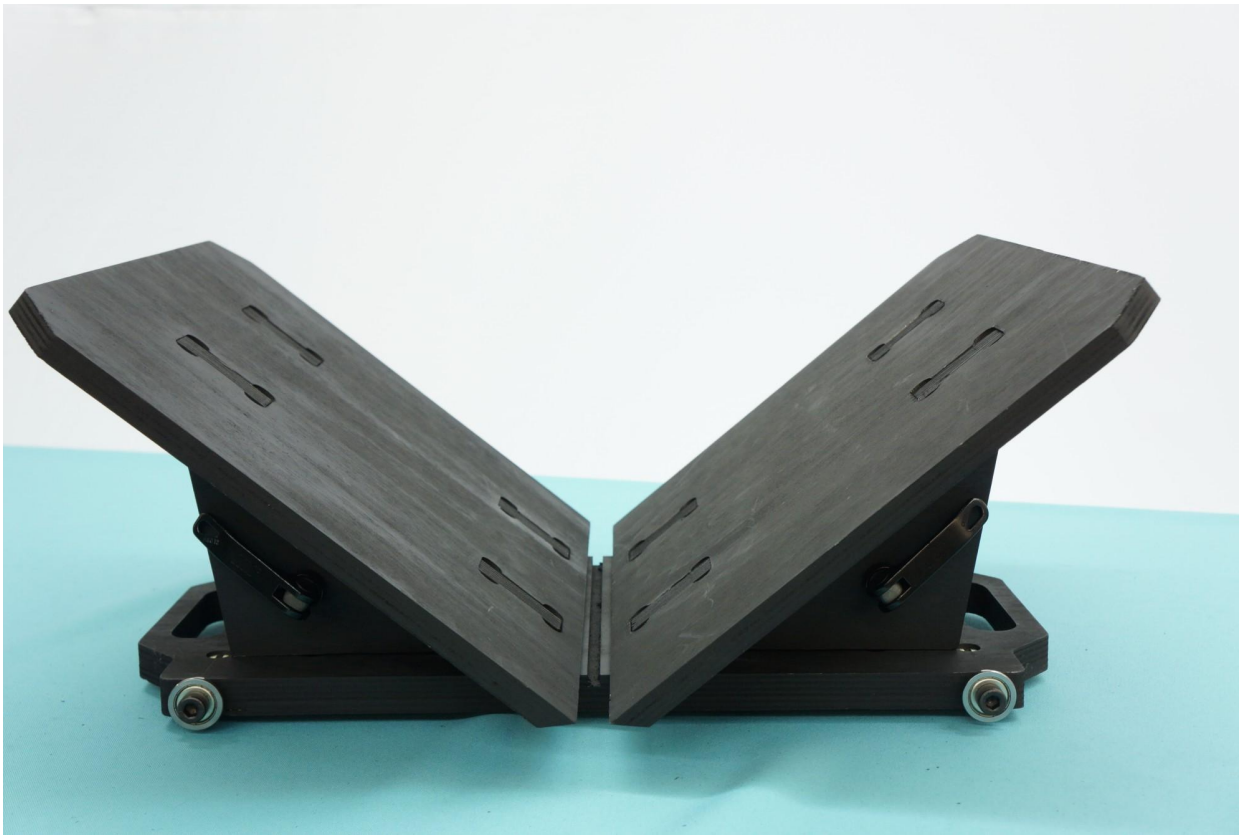


10b. Hammer the Cradle Angles to fully seat them. You can be pretty forceful, don't worry. Works best with a deadblow hammer or frozen ham.



11. ASSEMBLE BOOK CRADLE

11a. Insert the bicycle skewers through the holes on the Cradle Angles. Tighten the nuts on the bicycle skewers. Clamp.



11b. Seat the finished Leaves and Angles into the Cradle Base slots, making a V shape. For easy use, you want the skewer clamps to face the front of the scanner. Adjust the clamps until the whole cradle feels sturdy. Now you can easily unclamp and slide to fit any book spines.



12. BOLT FRONT/BACK PLATES AND CAMERA BRACES

Take the Front Plate (or Back Plate, they're identical) and bolt on the Camera Braces with furniture bolts. Now bolt on the Back Plate.



13. INSTALL GLASS

13a. Apply electrical tape along the two shorter edges of both glass plates. The goal is to have the tape overlap both sides of the glass evenly, providing a surface to rest on the wood. The the tape also pads the glass against abrasion from the metal brackets you'll apply soon.



13b. Lay the glass edges together at the beveled edge. Tape them together five or six times. This creates a flexible hinge that keeps the plates together perfectly when you lay them on the module.



13c. Flip the Imaging Module so the pointy parts go up. Seat your glass plates on the Imaging Module. The mitered edges of the glass plates should mate cleanly into a point.



13d. Tape the entire length of both glass plates to the wood frame.



14. BRACKET INSTALLATION

Grip the first bracket in place securely with your hand - a clamp could crack the glass. Screw the bracket into the wood. Start at one end of the bracket; screw point-to-point until finished. Don't switch sides, it is easy to make it uneven. While screwing in the bracket, you may feel the bracket and wood pushing apart. Clamp harder with your hand, or get a friend to help you out. Then tighten the screw the last bit. Remove the tape when you're done.



15. PUT IT ALL TOGETHER

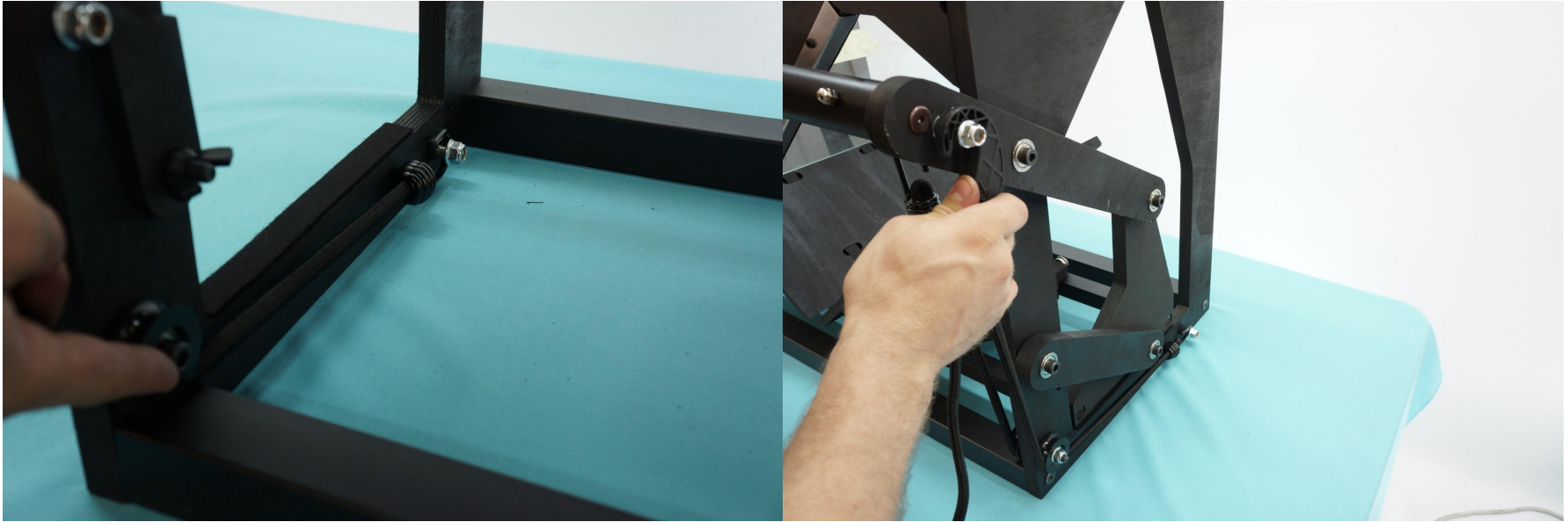
The cradle is removable so you can easily place a book in it. Remove it. Pick up the Imaging Module so the pointy parts face down. Seat it into the slots on top of the Scanner Base. The whole Imaging Module is symmetrical, so it doesn't matter which side faces front. Be careful. Get a friend to help you. Cracking the glass will make you very sad.



15c. Insert a cross dowel into the Side Plate. Like before, line up the indentation with the corresponding bolt hole. Insert a furniture bolt and tighten, securing the Front Plate to the Side Plate. Repeat three times. Be sure to drop your wrench three times for good luck.



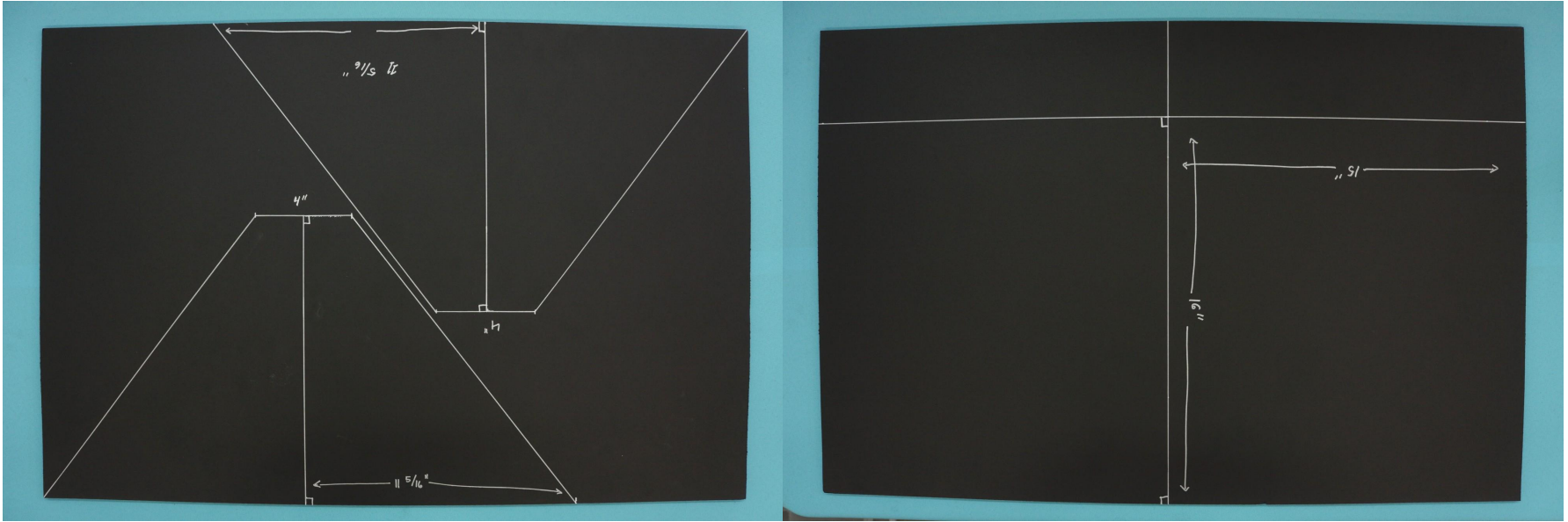
- 15d. Put the Book Cradle onto the Runners.



16. HOOK BUNGEEES

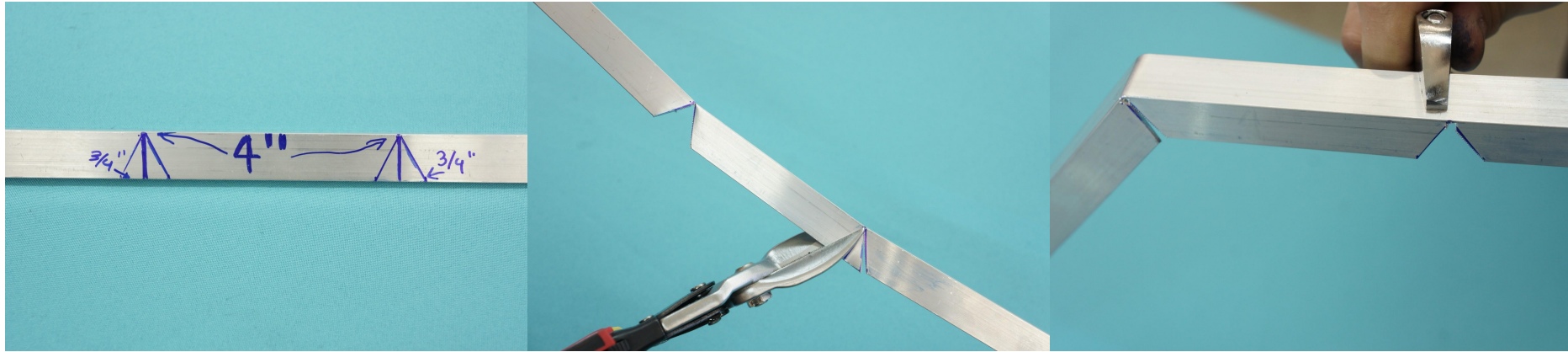
Engage the Lift Lock so the cradle doesn't jump at you when attaching the bungees.

Hook a bungee cord to the inner Attachment Point on the left side. Loop the cord under the pulley and hook it into the eyelet on the Handlebar. Do the same for the right side. Finally, hook a bungee to the outer attachment point on the right side and attach it to the outer attachment on the handlebar. Now you can lift your cradle no problem.



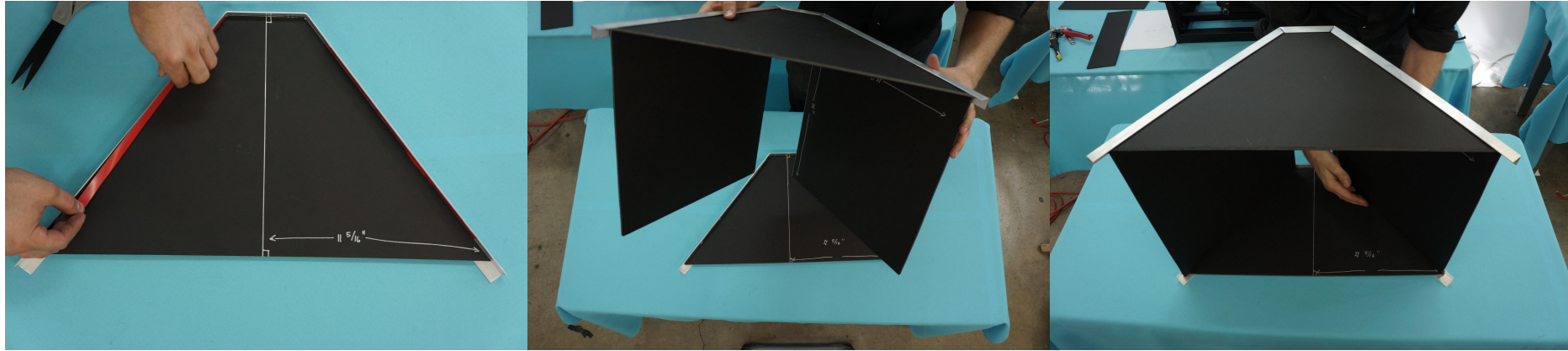
17. CUT FOAM CORE/Sintra

Cut the foam core to the sizes and shapes pictured.



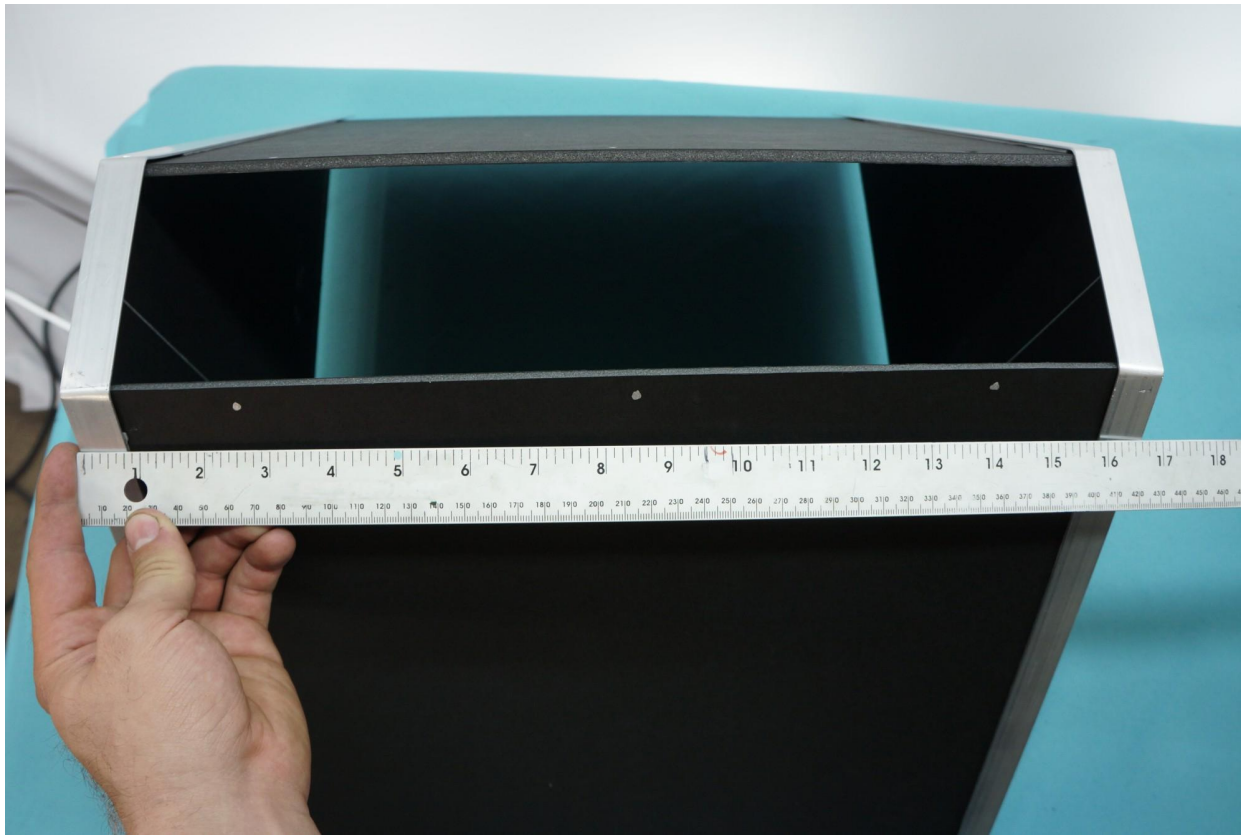
18. FOLD ALUMINUM ANGLES

On two aluminum angles, measure and mark the angle and cut points, as pictured. (18a_DSC07999) Snip with a tin snip. (18b_DSC08036) Now fold the aluminum to make your supports. You can use your spanner wrench to help you make clean folds (18c_DSC08059). If you bought a kit, these parts come pre-made.



19. STICK THEM TOGETHER

Stick the folded aluminum angles to the foam core. Double-stick tape, hot glue, or any sturdy glue all work well. We strongly recommend 3M's VHB - sold at hardware stores as "Outdoor Mounting Tape". Its strength is nothing short of life-altering.



20. AFFIX LIGHTS

20a. Drill holes to zip-tie your light fixtures. The side holes go $2\frac{1}{2}$ " from the edge; the middle hole is smack in the middle. Since I was using foam core, I just set the lights on top and marked the hole locations with a marker.



20b. Zip-tie the three light fixtures in place.



21. GLARE-CONTROL

Install 6"x15" pieces of foam core above the camera brackets.. These ensure no glare from the cameras bounce onto the book pages. They make a big difference, as shown.