

vInstructions for Assembling “The Ambigulator” MechaniCard™

Thank you very much for purchasing “The Ambigulator” MechaniCard™ kit! This is the very first in my series of mailable kinetic sculptures. The parts in this kit are identical to those which I put together, for sale as completed works. Everything you need is included, except glue and tools. Please, follow these instructions, and study the accompanying diagrams, carefully, to successfully complete your working, MechaniCard™ model.

Note: These directions are a work in progress, at the moment. If you have any questions, please feel free to email me at blit@bradlitwin.com

1. Gather the tools and materials you will need:

High Viscosity Type Cyanoacrylate Glue (Gap-filling Super Glue for wood/paper) – the quick-setting type is not recommended. **WARNING!** Cyanoacrylate glue aggressively bonds skin. Exercise caution when applying, or when handling freshly glued assemblies. **WEAR SAFETY GLASSES!**

Small Forceps (tweezers)

Magnifier

Toothpicks

Razor Blade/Hobby Knife

Wax paper

Familiarize yourself with all the parts of the kit, shown on the next page. Open the bag under good lighting, onto a well constrained work area, as some pieces are very small.

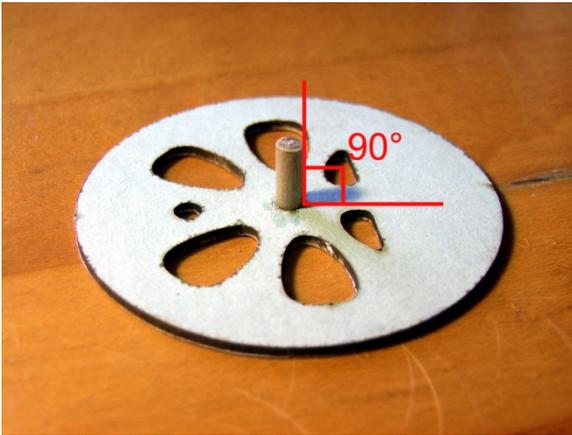
“The Ambigulator” by Bradley N. Litwin



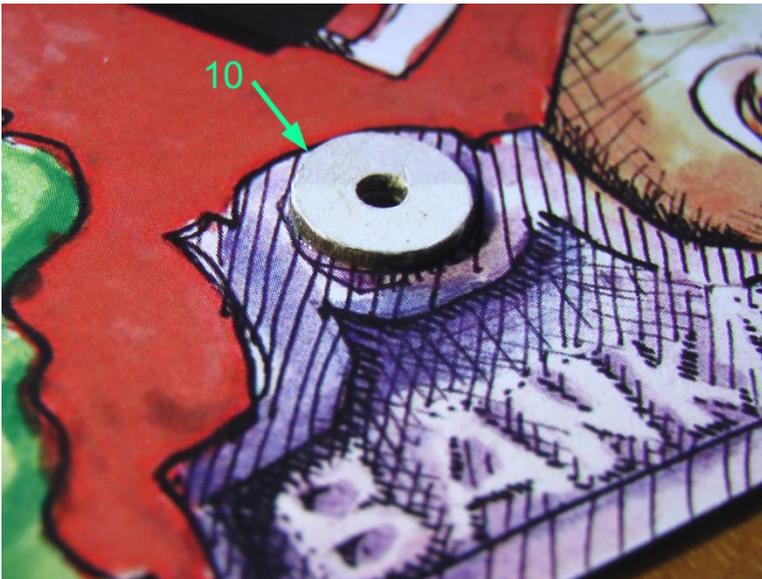
- | | |
|------------------------|---------------------------|
| 1. Main Plate | 17. Rod Mount (2) |
| 2. Connecting Rod | 18. Wheel Stabilizer |
| 3. Wheel | 19. Crank Sleeve Ring |
| 4. Crank Pulley | 20. Con-rod Pivot Cover |
| 5. Drive Belt | 21. Sector Gear Link |
| 6. Visor Mask | 22. Crank Staves (2) |
| 7. Visor | 23. Sector Gear |
| 8. Pulley Spacer | 24. Crank Peg |
| 9. Escucheon | 25. Wheel Shaft |
| 10. Wheel Spacer | 26. Inner Drive Pulley |
| 11. Slider | 27. Crank Pin |
| 12. Fleur-de-lis Pivot | 28. Slider Rod |
| 13. 1/4" Rivet | 29. Crank Sleeve |
| 14. Fleur-de-lis Link | 30. Drive Pulley Flange |
| 15. 3/16" Rivet (4) | 31. Standoff Sandwich (5) |
| 16. Visor Retainer | |

2. All glued assemblies are made with gel type Cyanoacrylate glue(Superglue). Be sure to remove any excess glue from around joints, and allow them to set, before proceeding with subsequent procedures.

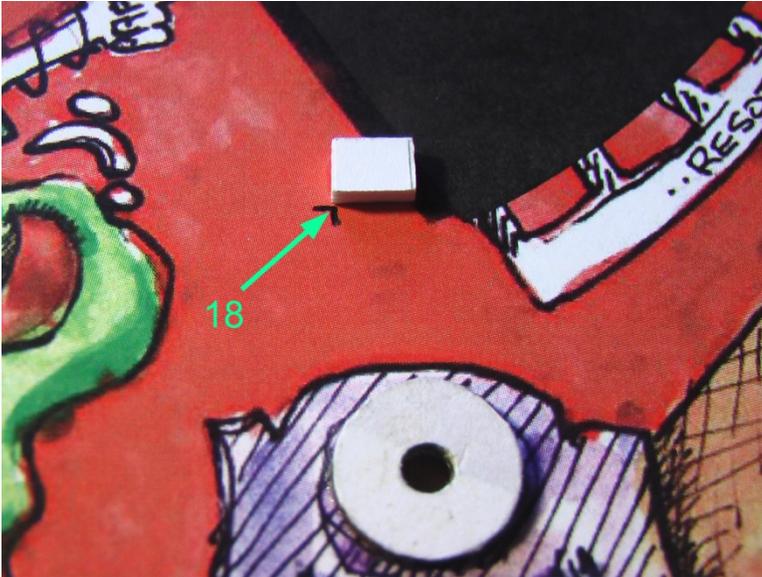
Glue Wheel Shaft (25) into the central hole, and flush with the face of Wheel (3), making sure shaft protrudes at a 90° angle.



3. Glue Wheel Spacer (10) onto Main Plate (1) in alignment with wheel hole. Tip – use a rivet or the wheel axle as an alignment guide.



4. Glue Wheel Stabilizer (18) into place on Main Plate (1), with its lower corner lined up with the mark, as shown.



5. Glue Escutcheon (9) onto Pulley Spacer (8), using the Crank Pulley (4) as an alignment guide. Do not allow the pulley to become glued in! Be sure to remove any glue residue left on the pulley.



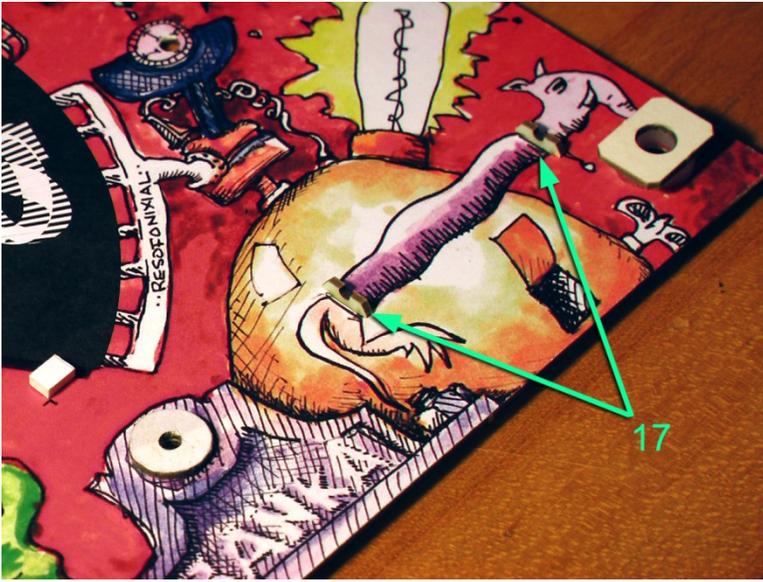
6. Glue Escutcheon/Spacer assembly onto Main Plate (1), as show, again, using the Pulley Spacer as an alignment guide.



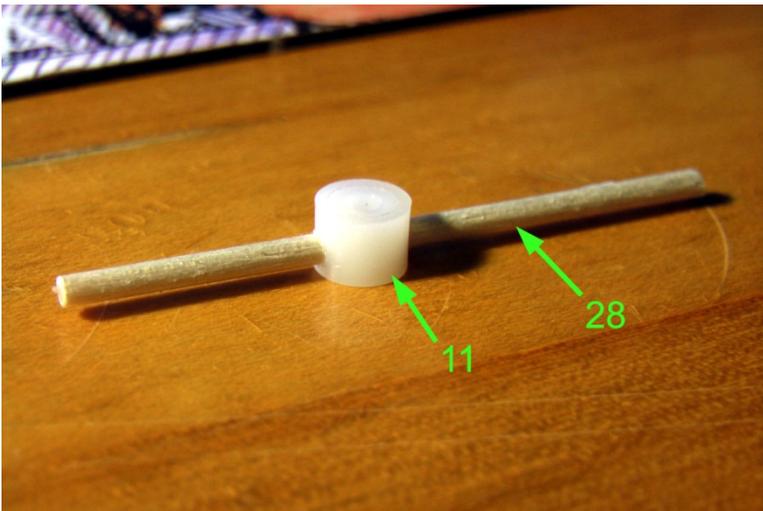
7. Apply glue inside 2 rectangular holes in the Main Plate...



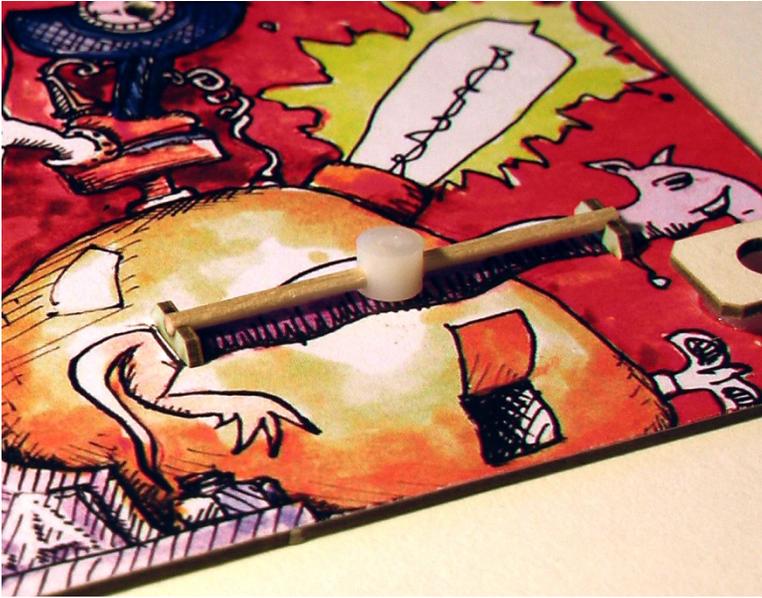
...and insert Rod Mounts (17), as shown.



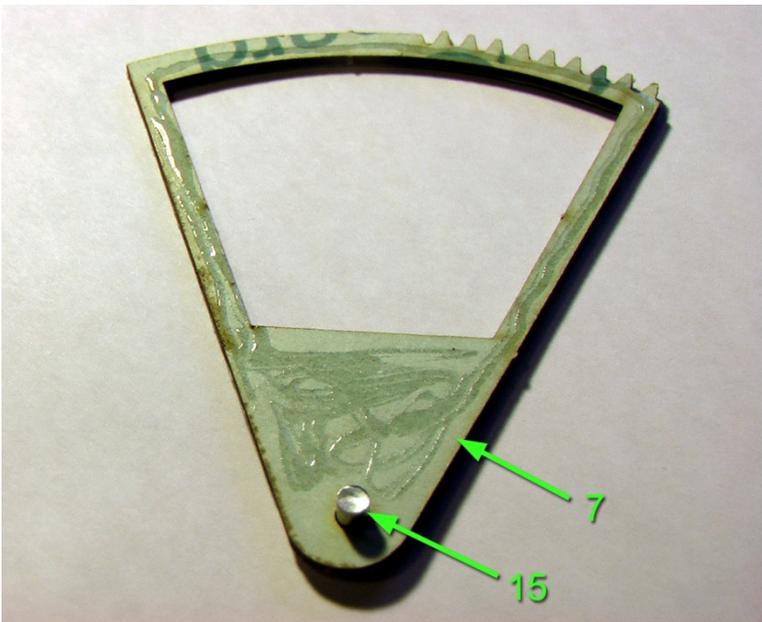
8. Insert Slider Rod (28) through cross hole in Slider (11). Check for smooth passage, from end-to-end, and sand lightly, if necessary.



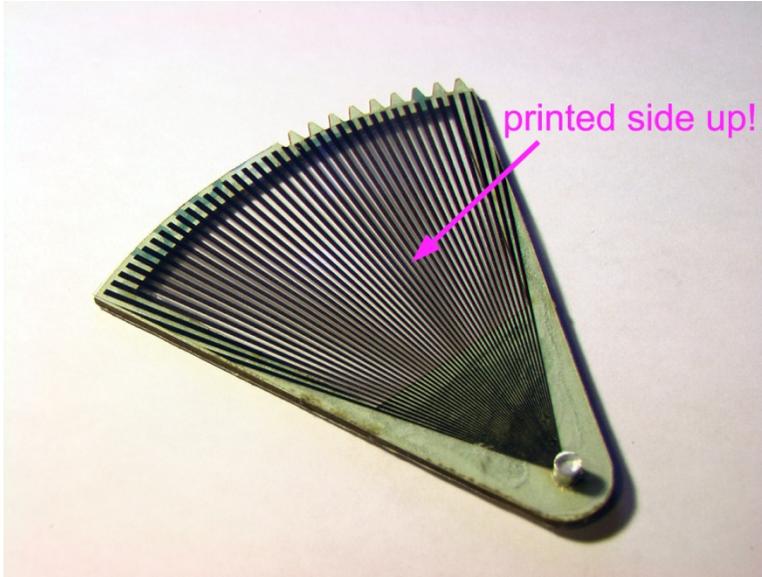
9. With the slider oriented as shown, glue ends of Slider Rod into grooves in Rod Mounts. When dry, double check that Slider moves freely.



10. Insert (do not glue) 3/16" Rivet (15) into the hole in Visor (7). Apply a sparing amount of glue to underside of Visor, as shown...



...and attach the Visor Mask (6) **PRINTED SIDE FACING UP**, using the rivet as an alignment guide.



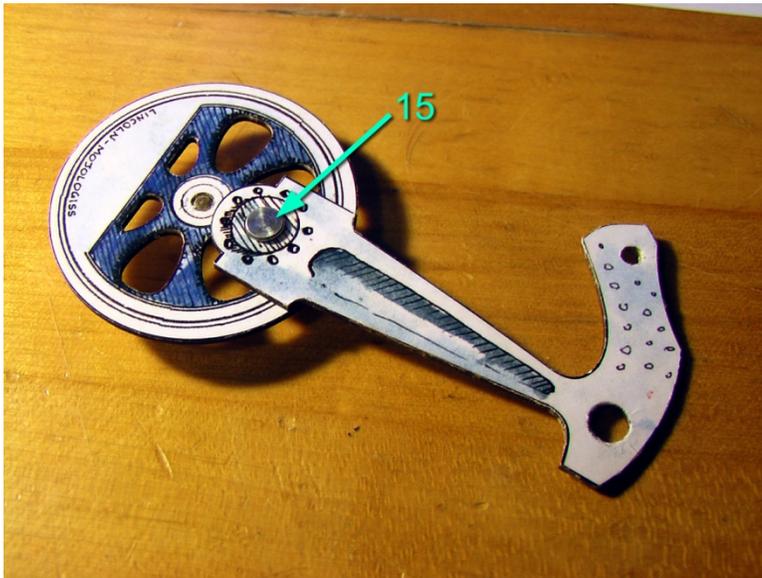
11. Attach Visor Assembly to Main Plate (1), installing its rivet at the upper left corner of the Main Plate (location seen in last step). The image below shows a typical example of the amount of glue, recommended for all the rivets, in this project.



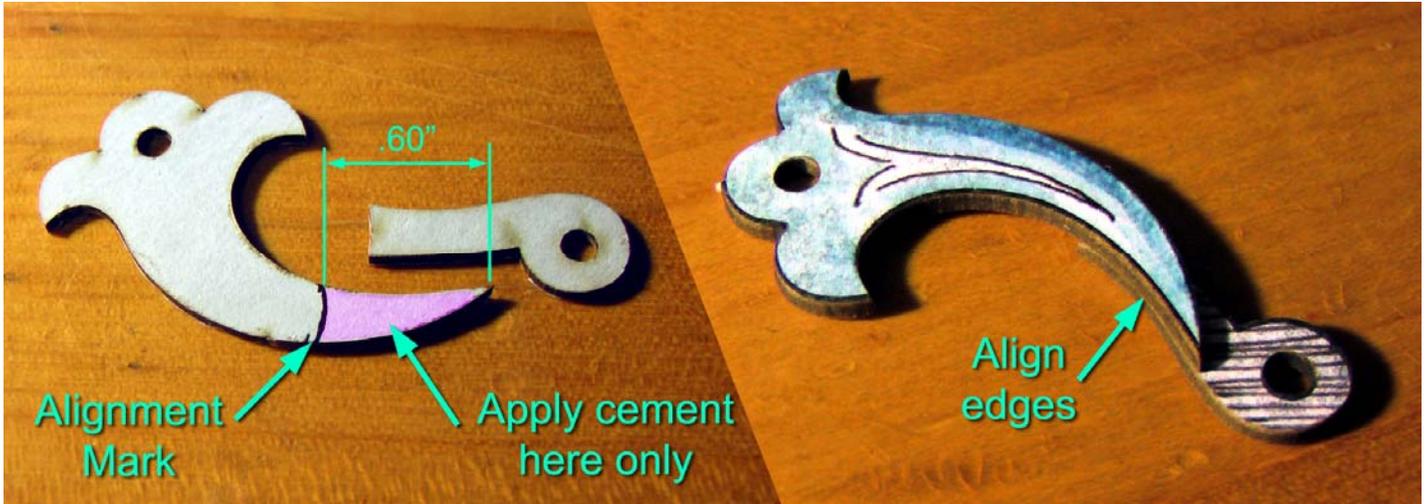
12. Glue the Visor Retainer (16) onto the Main Plate, as shown, leaving a small clearance for movement of the Visor Assembly.



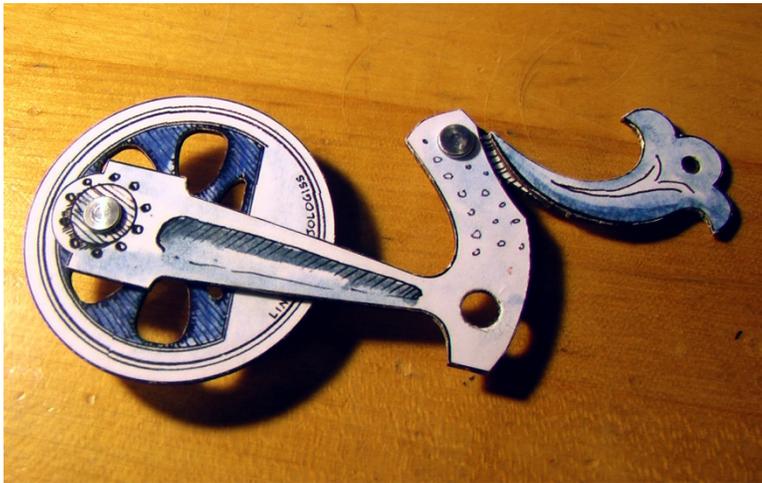
13. Assemble Connecting Rod (2) to Wheel (3) with 3/16" Rivet (15), as shown.



14. Assemble Fleur-de-lis Pivot (12) to Fleur-de-lis Link (14). Apply glue only to area shown, aligning mark on back side, and top edges, as shown.



15. Assemble Fleu-de-lis to Connecting Rod, as shown, with a 3/16" Rivet (15).

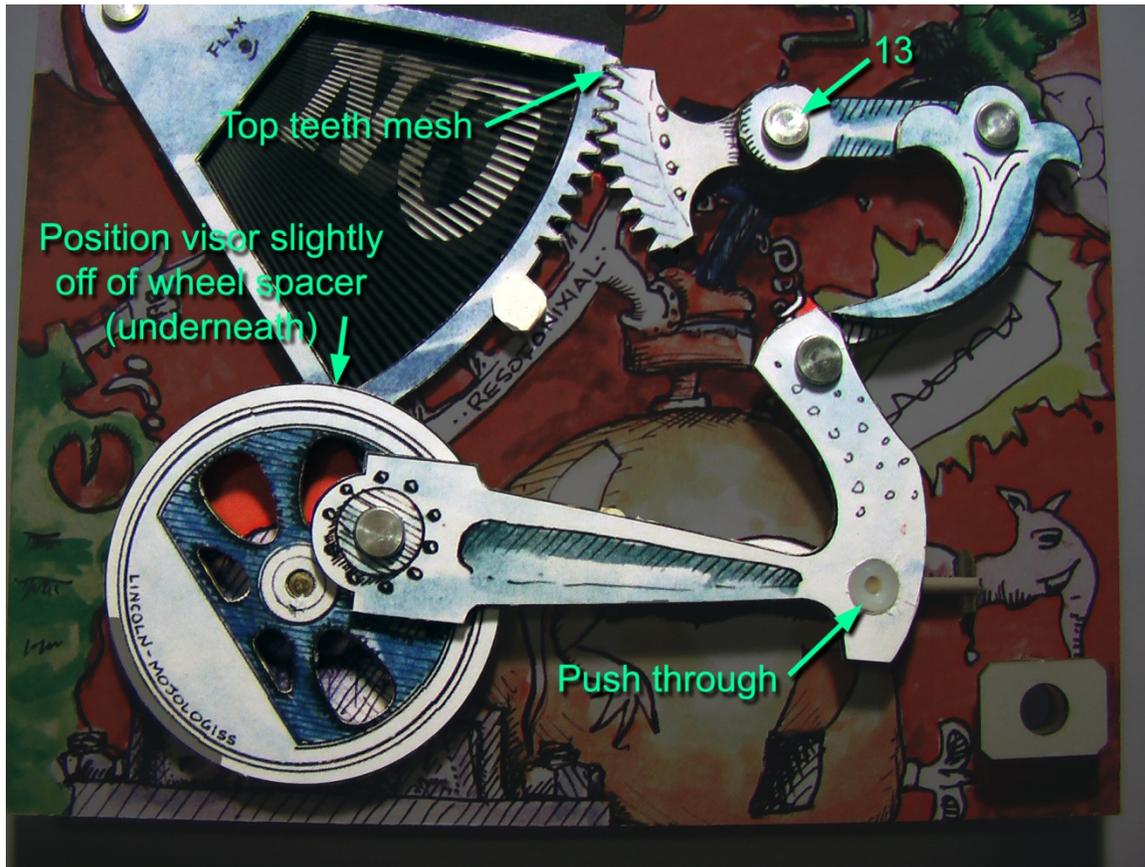


16. Assemble Sector Gear Link (21) with Fleur-de-lis, as shown, with a 3/16" Rivet (15).

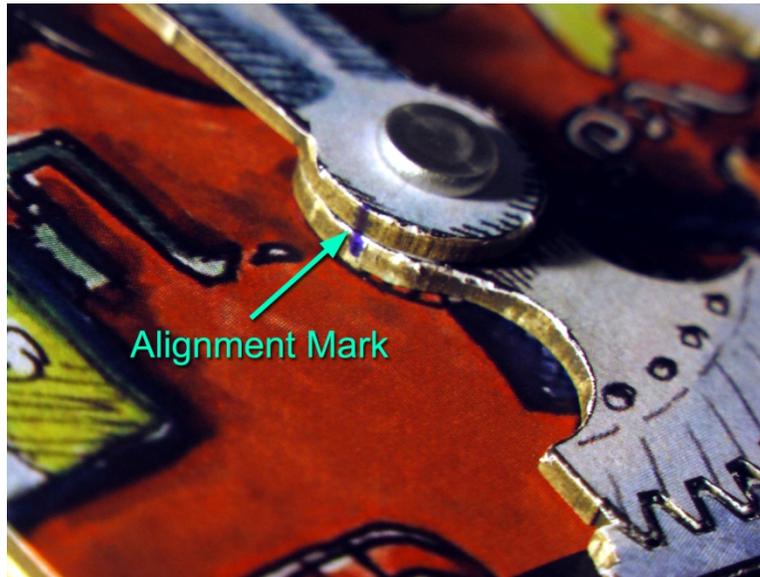


17. Install the Wheel and Link Assembly on the Main Plate, as shown. Push the Slider clear through the large hole, at the end of the Connecting Rod. Temporarily install the 1/4" Rivet (13) through the Sector Gear Link (21) and through the Sector Gear (23), and into its hole in the Main Plate. The top tooth of the Sector Gear should be engaged with the top groove of the Visor gear teeth. Rotate the wheel to check for free operation, before proceeding.

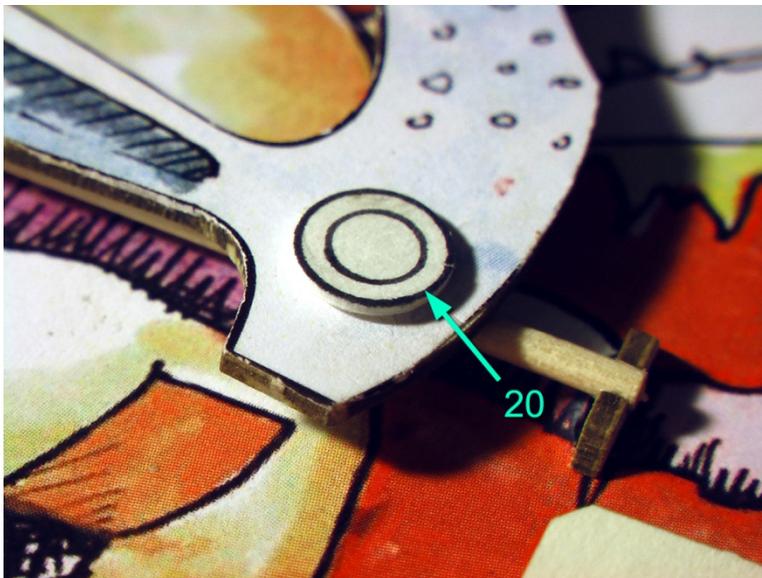
Rotate the wheel to about the 2 O'clock position, such that the Fleur-de-lis is at its maximum extension. Position the Visor, so that it is just clear of the Wheel Stabilizer (1/32" – 1/16")...



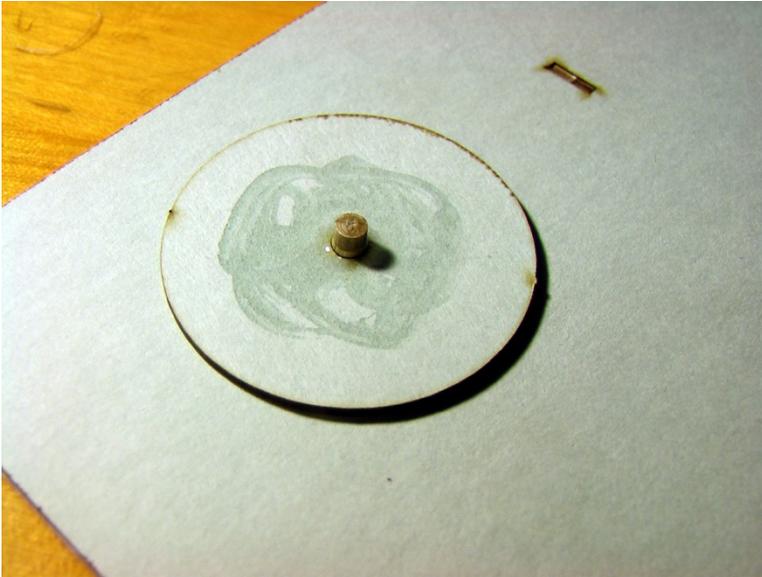
...make a line, as shown, across the edge of both the Sector Gear, and the Sector Gear Link. Glue the Sector Gear to the Link, guided by the Rivet and the alignment marks. Be sure that the rivet turns freely! Once the joint is set, glue the Rivet into its hole, in the Main Plate. After glue is dry, turning the wheel should operate the motion of the visor.



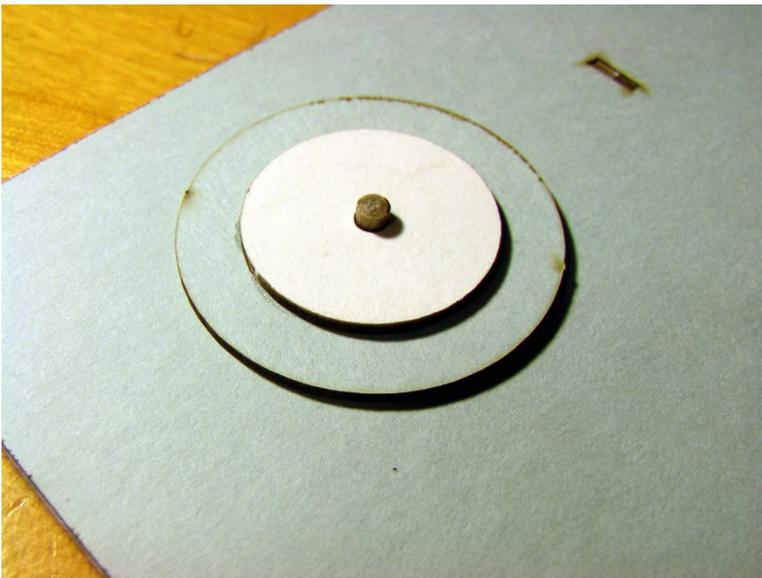
18. With a very sparing amount of glue, install the Con-Rod Pivot Cover (20) to the face of the Slider, as shown. Be careful! Glue infiltration in the slider can be a serious problem to fix.



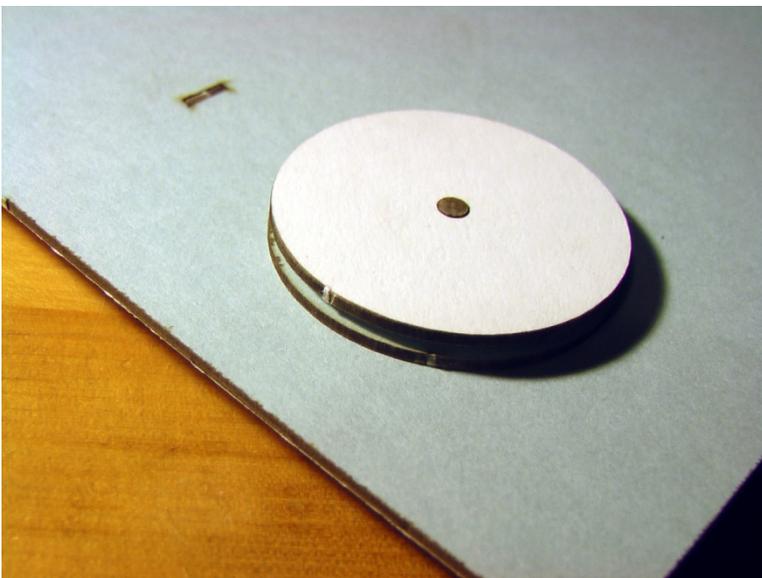
19. Vigorously rub the white side of one Drive Pulley Flange (30) onto wax paper. Install on wheel shaft, waxed side down, as shown, and apply glue for...



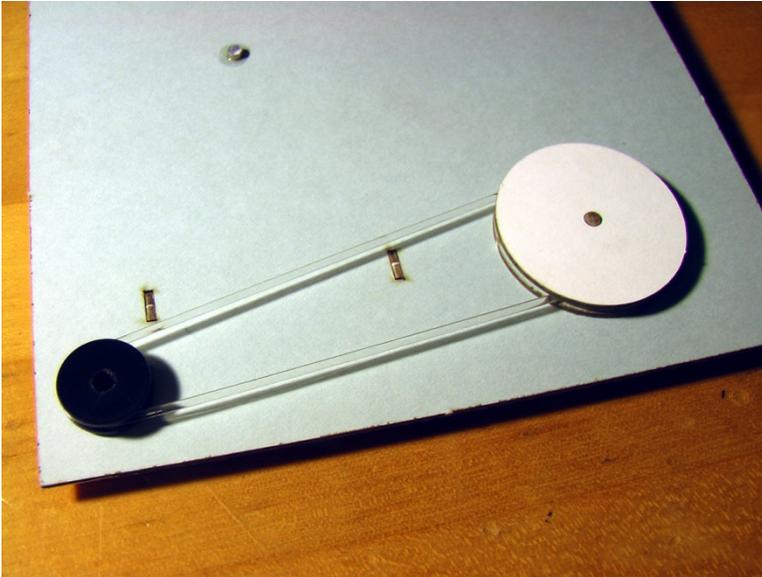
...installation of the Inner Drive Pulley (26)...



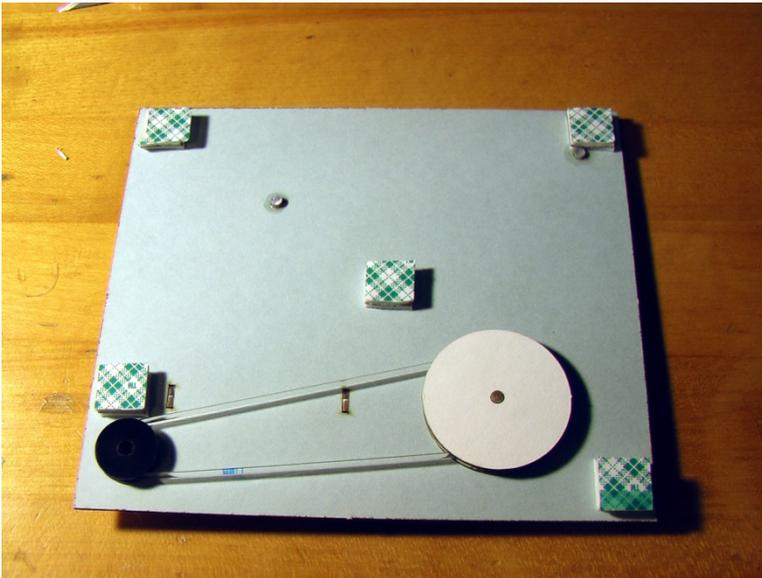
...and then, the remaining Pulley Flange.



20. Install Crank Pulley (4) and Drive Belt (5) as shown.



21. Install Standoff Sandwiches (31) as shown. Standoff at lower left should not interfere with the Crank Pulley. Mechanism can be tested by pulling on drive belt, from side-to-side.

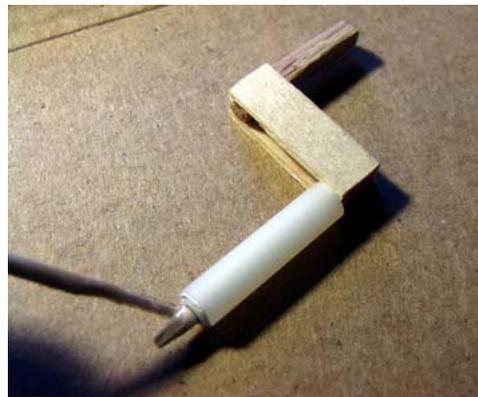
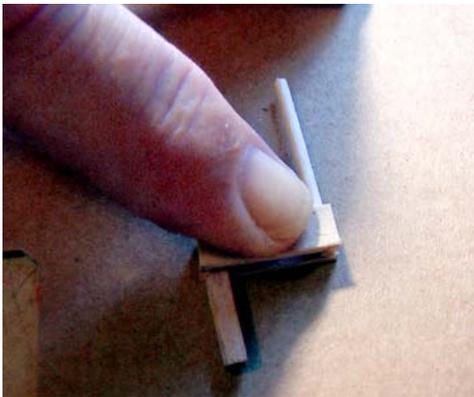


22. Mount the completed mechanism into the Mailer Box, being sure side flaps won't interfere with the edges of the Main Plate, when folded up.



23. Hand Crank Assembly

Check and adjust for ease of fit, inserting the square Crank Peg (24) into its receptacle in the crank pulley. Apply glue to Crank Staves (22), sandwiching Crank Pin (27) and the square shaft into right-angle 'Z' configuration, as shown. Allow to dry thoroughly.



Install Crank Sleeve (29) on Crank Pin. Place Sleeve Retainer (32) onto Crank Pin, snugly Sleeve, affixing with a small drop of glue. When dry, trim end of pin, as desired. Crank Sleeve should spin freely.

Place the square peg of the Hand Crank Assembly into the Crank Pulley, and rotate to operate sculpture. Crank may be safely stored in the space between the Back Plate and Mailer Box. Put the crank handle through the Crank Strip (not shown), which makes it easy to pull out from under the plate. For display, you can tape the box flaps underneath the piece, or use the adhesive strip on the box flap.



Please, remember! Though this little sculpture is fairly robust, it is nonetheless made of paper. Wear and tear is a sure to follow, as you pass it around. So, enjoy it while it lasts.

Bradley W. Litwin

For more MechaniCard™ and kinetic sculpture fun, visit MechaniCards.com and BradLitwin.com