

1. Organize pieces for jig.
2. Place a dowel rod support block on both sides of numbered blocks and insert in numerical order into jig plate.
3. Press side rails into place and hold assembly together with several rubber bands. (do not use glue!)



4. Slide two circular cams onto dowel rod, in the approximate locations.
5. Apply glue liberally between two cams and on the dowel rod where the cams will be located.

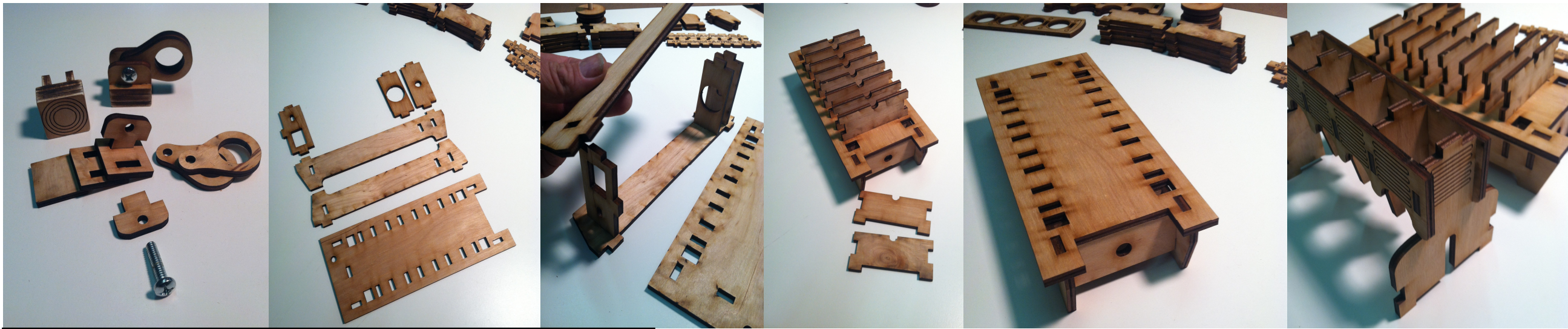
6. Center the dowel rod above the jig and work the cams into the proper positions, while seating them into jig. Squeeze cam blocks together for half a minute or so. (Excess glue is not a problem. Let glue set for 5 minutes.)



7. After glue is partially hardened, remove rubber bands from jig. Let jig pieces fall apart. Any pieces stuck to the crankshaft can be levered away—do not twist or rotate, as it may break the cam glue joint.
8. Holding the crankshaft vertically, apply glue around the dowel/cam joint and allow it to dry thoroughly while vertical.

1. glue a large and small disc together and slide onto motor shaft. Wipe away excess glues and let dry completely.
2. When dry, slide half-pulley off. Slide other large pulley disc onto shaft, apply glue and press half pulley on, as shown. Wipe away excess glue and let dry completely. Note: Pulley will have to be removed again before installing electric motor in engine model base.





1. Organize piston components and glue together. Press edges against bench surface and be sure to square the whole assembly. Let dry completely. Place a sheet of sandpaper on bench surface and sand all piston surfaces smooth.
 2. When all four pistons are dried and sanded, install two connecting rod pieces using a 1 x 1/4-20 bolt

3. Layout pieces for engine model base. Apply glue to all tabs and slots and assemble. Use rubber bands or masking tape to clamp while drying.
 4. Insert 8 crankshaft bearing blocks in base plate (see far right photo of assembly in background. No glue req'd)
 5. Assemble Cylinder side walls and divider panels (without glue). Glue Cylinder Head panel on top.

6. Slide crankshaft through the four piston/connecting rod assemblies. (sand inside connecting rod opening if necessary) With Cylinder Wall assembly inverted, carefully align and slide the pistons into the cylinders.
 7. While holding the crankshaft, pistons and cylinder walls together, turn the assembly right-side up and fit it over the Crankshaft Bearing Blocks. Be sure the tabs of the outer Cylinder Walls are fully seated in the base floor slots. (no glue req'd on these parts)

8. Install two additional crankshaft bearing blocks on the outer side of each Cylinder End Plate. To do so, lift one end of Cylinder Wall/Crankshaft and Piston Assembly slightly to be able to angle the Cylinder End Plate into position.
 9. Place drops of glue on the side notches in the crankshaft bearing blocks and insert the nameplates on both sides.



10. When glue is dry, turn unit over and insert electrical motor. Slide pulley on. Then glue and press flywheel components onto dowel rod, ensuring they align with pulley.
 11. connect switch, battery terminal and motor with included wire.
 12. place 2 or 3 rubber bands on flywheel and pulley.