SUNNYSIDE UP PARTS LIST

000 - Coroplast frame - to hold the solar panel, motor and axles
       (can be any recycled item, or wood, or other toy perhaps)
001 - Push pin - for marking holes, and creating starter holes in wood
002 - Screw eyes (5) - to hold axle/shafts
003 - Wood block (2) - to firmly hold screw eyes
004a - Shorter axle shaft - holds two wheels
004b - Longer axle shaft - holds driven pulley as well as two wheels
004c - Tweazle stick (see The Making of a Tweazle)
005 - Wooden wheels (5 - one spare) - to transfer energy from driven
       axle to ground (which reacts by pushing car forward)
006 - Sandpaper - to sand dowels (and wood blocks if you want)
007 - Tubing - to be cut into four 1 cm or 1/4 inch pieces as in-line
       shaft retainers
008 - Pulley - driven pulley transfers force from drive-belt to axle.
009 - Motor - converts electrical energy into mechanical energy
       (spinning shaft with motor pulley)
010 - Motor mounting clip - to hold motor firmly to body.
011 - Elastic bands (2 - one spare) - drive belt to transfer energy from
       motor pulley to driven pulley
012 - Solar panel with alligator clip test leads - to produce
       electricity from sunlight

The Making of a Tweazle

Educational artifact for studying spin

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VISIT OUR WEBSITE
www.sunwindsolar.com
for more solar energy kits, lessons,
notes and other sample models that
can be built with our kits.
INSTRUCTIONS (written supplement to the images)

Check the contents of your kit, and that you have all the materials shown in the parts diagram and/or listed in the parts list.

0 - On the coroplast body (000) use the push pin (001) to mark four locations for screw eye axle-holders (002). You will want your axles to be parallel and running straight ahead - consider this as you mark the holes for the axle holders.

1 - Insert screw eyes through coroplast and into wood blocks (003). If necessary, widen a starter hole for the screw eye in the wood with the push pin. When screwing in the screw eyes, you can use a dowel as a lever to make turning easier.

2 - Ready to receive axles.

3 - Select the shorter axle (004a) and two wheels (005).

4 - Using sandpaper (006), very lightly sand the end of the dowel, and insert into wheel.

5 - Snippets of tubing (007) are used as "in-line shaft retainers". Cut four small pieces of lengths 1 cm or 1/4 inch.

6 - Work the tubing piece onto the axle/shaft.

7 - Slide the tubing down the shaft.

8 - The "in-line shaft retainer" keeps the wheel from rubbing against the body.

9 - With the axle in place through the screw eyes, slide another tubing piece onto the shaft, and mount the second wheel.

10 - Select the longer axle (004b), two wheels, and the red pulley (008).

11 - The small red pulley may require that the axle be sanded. To keep the dowel round, twist the axle in folded sandpaper. Do not sand off too much - the pulley must grip the axle firmly.

12 - Slide the pulley onto the axle. (If the pulley is loose, try jamming a piece of masking tape under it, or use a glue gun.)

13 - Attach a piece of tubing and a wheel. If the wheel is loose, you may use wood glue or white paper glue to hold it.

14 - Mount the driven axle, slide on another piece of tubing, and the last wheel.

15 - Place the motor (with motor pulley attached) (009) into the motor clip (010).

16 - The motor clip has a protective layer over the sticky-back. Peel this off when you are ready.

17 - With the elastic band drive-belt (011) around the driven pulley and the motor pulley, position the motor clip so that the elastic band has an easy tension - not too loose, and not too tight.

18 - Attach the alligator clips of the solar panel (012) to the two metal terminals at the back of the motor. Solar panels produce direct current electricity. Note that reversing the connections at the back of the motor will reverse the direction of the motor's spin.

19 - Run in the Sun! Try holding the solar panel on tighter with a small piece of scotch tape or velcro. You can as well, using recycled materials, design a movable holder for the solar panel, to let it turn toward the Sun.