

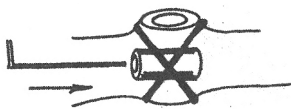
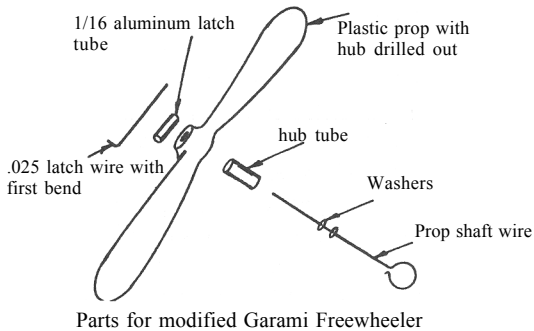
# MODIFYING THE GARAMI FREE-WHEELER

by Mark Fineman

*This article was derived from a larger piece originally published in the January 1986 issue of the now defunct Model Builder magazine and reprinted in the November 2010 issue of Tailspin, the Journal of the FAC Bay State Squadron, Mike Nassise, Editor. It contains very useful information on improving the performance of plastic propellers.*

The built-in ramp type freewheelers molded into the front of many plastic props sometimes malfunction, and with repeated use may wear down, allowing the prop shaft to disengage. The type of freewheeler shown here is a variation of the type invented by Louia Garami. Maybe At some point in the future I will say more about Garami's wonderfully inventive model airplanes.

The Garami freewheeler uses a wire latch that engages the prop shaft under power and then swings out of the way when the prop moves on past the shaft after the power dies, as during the glide. You will need some .025 or .032 music wire, two short lengths of aluminum tubing (*Thermalier Ed. Note: recommend one piece of aluminum and one piece of brass tubing*), glue, thread, and perhaps some miniature brass washers to make one. *The plastic prop's hub must be first drilled out to accept a short length of tubing, the inside diameter of which must accept the prop shaft wire. So, for example, if the prop shaft is .032 wire, the hub tube must be 1/16" outside diameter. An .047 wire would require a tube of 3/32" outside diameter, and so forth. (This is the modification to the Garami freewheeler design that greatly improves its action - Editor). (Thermalier editor: Sorry, but Mark is incorrect here ? a .047 prop shaft requires a Special Shapes brand # 05037 1/16"OD brass tubing)*



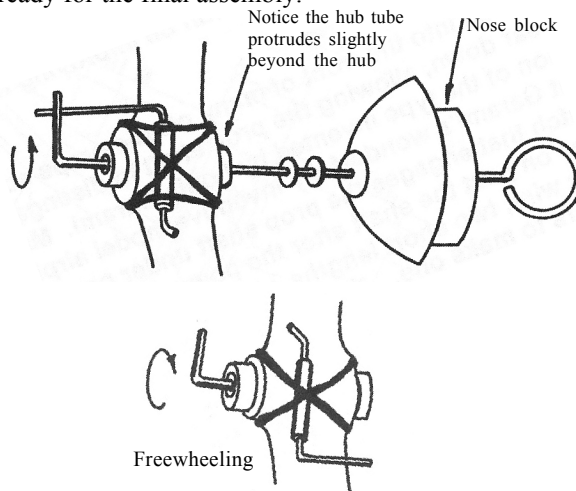
The 1/16 latch tube is glued into a filed groove, wrapped in thread and the thread solidified with CA.

If the plastic prop has a molded ramp, carefully cut it off and file the hub flat. Drill the hole for the hub tube to the correct diameter with a hand-held twist drill, and **be sure the tube passes through the hole without binding - this is important.** Cut a length of tubing just slightly longer than the length of the hub hole and set it aside. This tube will bear all of the inward-pulling force of the prop shaft (that's why

this should be brass, Thermalier Ed.) later on and make it impossible for the prop to seize under any conditions.

Next, file a shallow groove at the center of the hub at right angles to the hub. A short length, perhaps 1/4 to 3/8 of an inch, of 1/16" diameter aluminum tubing will then be seated in this groove. I've attached the tube with 5 minute epoxy, but a safer way is to glue the tube carefully with Ambroid or the like and then wrap it securely with thread. You must be very careful to prevent the glue from clogging the ends of the tube. After the thread is tightly knotted, a drop or two of Cyano glue will solidify the thread.

When this part has set, make a right angle bend in a length of music wire (usually .025 wire) leaving a very short "tail" of 1/4" or so. The overall length of this wire need not exceed 2". Insert the long end of the wire through the glued latch tube, (from left to right, Ed.), and, with the short, bent "tail" jutting out perpendicularly to the surface of the prop blade, hold the wire close to the tube with needle nosed pliers, and bend the long end of the wire forward until it is parallel with the eventual position of the prop shaft. This creates a second "tail" that the shaft wire will eventually engage. Now, you are ready for the final assembly.



Insert a long prop shaft through the nose block/thrust button assembly. Add washers as is your usual practice. Place the hub tube into the drilled out prop hub (**the hub tube must slide smoothly through the hub**) and place this onto the shaft wire. Bend the shaft wire at a (sharp) right angle so that it will engage the wire hub latch. Now you can trim the shaft wire and latch wire so that they are just long enough to engage one another without being obtrusive. You may want to give the latch wire a slight upward bend so that the latch wire will not slip past when the motor is fully wound. Now you can see that with the latch wire down, the shaft wire will only engage when it is turning counterclockwise. When the prop shaft stops, as power runs out, the latch is knocked out of the way and the prop spins freely. **Because of the additional tube within the hub, no amount of backward force on the shaft wire will bind the prop and prevent it from freewheeling once it has begun moving.** Of course, when you wind the rubber motor, **you must be certain that the latch engages the shaft wire** or else the shaft will just turn wildly without rotating the propeller.

Making a modified Garami freewheeler assembly may seem difficult when you first read through the directions. It's really not as bad as it sounds. Study the accompanying sketches carefully to be sure you understand how all this works. Like so many modeling skills, once you catch on, it will become second nature.