MAKING FOAM WHEELS

by George White

For those of us who have suffered the frustration of making foam wheels, here's a technique which actually works. In my previous attempts I would drill a hole of appropriate size to fit the landing gear wire in the end of a small dowel. Then I'd cut the dowel off to about 1" long, drill a hole the size of the diameter of the dowel in a piece of blue foam, glue the dowel into the foam. After the glue dried, I'd chuck the dowel into my drill press and start sanding away. I then experienced one or both of two problems. Either the dowel would break loose in the foam while I was sanding, or if it didn't, I invariably found that the hole I drilled for the landing gear wire was not in the center of the wheel. Center drilling a hole in a piece of dowel is, short of owning a lathe, beyond my meager skills.

After getting liberal advice from the "older boys," here's the procedure I used to make wheels for a 29" scale Mauboussin Hemeptre Type 40 (that's a weird looking French thing made in 1936).

Shave, sand, hotwire or otherwise make some blue foam the correct thickness to match the wheel.

Cut a square piece of foam, the dimensions of which are a bit larger than the wheel you want to make.

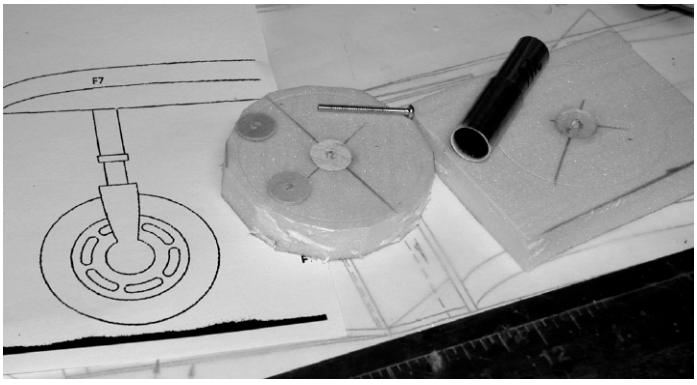
Cut a piece of brass tubing about 2-3" long and about 1/3 the diameter of the finished wheel. Rough up one end with coarse sandpaper or a file to make a cutting edge.

Stack as many pieces of medium hard balsa as necessary to equal the thickness of the finished wheel. You'll use this to make a plug for the center of the wheel.

Use the brass tube in a drill press to cut a plug in the balsa; then cut a hole the same size in the approximate center of the blue foam. While you're at it, use the brass to score two circles into a piece of 1/64" ply. You probably won't be able to drill all the way through plywood with the brass tube, so finish making ply disks with scissors. These disks are shown below laying on the blank wheel.

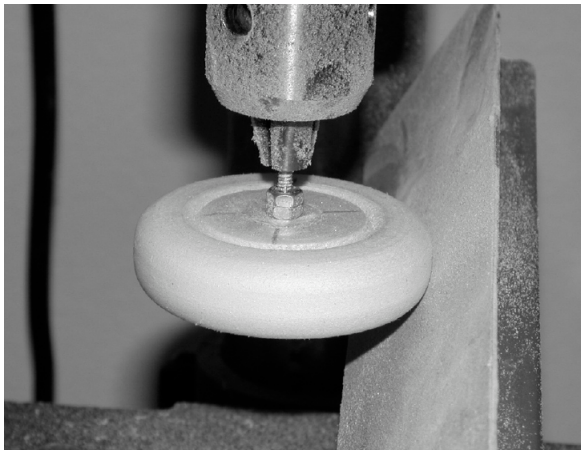
Glue the balsa plug into the hole in the center of the foam square.

Find the center of the foam square/balsa plug as shown in the photo and drill a 7/64" diameter hole through the plug and also through the two 1/64 ply disks.



Using a draftsman's compass centered on the hole you just drilled in the balsa plug, draw a circle on the foam blank slightly larger than the finished wheel. Rough cut the foam blank to approximately the shape of the wheel as seen above.

Using a #4-40 machine screw, 1-1/4" long (available at Lowes), sandwich the plywood disks on each side of the balsa plug, tighten the screw down with **double nuts**, and chuck the thing in the drill press.



After sanding the outer tire to the correct diameter and rounding it, use a small jeweler's file to cut the inner tire rim, and if you want tread, now's the time to use the same file to create the tread. If the "metal" part of the wheel has a conical profile, a small stick with sandpaper will come in handy to create that.

That takes care of one side of the wheel, but cutting the inner tire rim on the other side while in a drill press isn't practical. So, chuck the thing into a hand drill, put the hand drill in a vice, and do the other side.

Remove the screw and the plywood disks, insert aluminum tubing for a bearing, and you've got a wheel.

Paint it first with thinned Elmer's glue, sand, and then paint with cheap artist's water based acrylics. I mixed some red in with the black to get the black closer to what a rubber tire would be. Cut out a paper wheel/rim and glue it on with foam friendly glue.