

Building and Flying Model Airplanes

This is the fifth of a series of articles by Paul Edward Garber, telling how to make model airplanes. Mr. Garber is in charge of Aeronautics at the Smithsonian Institution.

Making A Geared Winder

As you have discovered in flying your model airplane, winding the propelling rubber by hand is hard work. It was therefore suggested in the last article that a geared winder could be constructed from an egg beater. Obtain an ordinary egg beater such as sold at any hardware store. Preferably select one in which the large driving gear rotates between the two driven gears, and in which the beater shafts are firmly fixed in the frame. With such a beater in hand proceed to make your geared winder as follows:

In the drawing an ordinary egg-beater of the type desired is shown. It is to be cut where the dotted line indicates. This cutting may best be done by clamping the egg-beater in a vise and sawing through it with a hack saw. If you do not have the necessary tools, the use of them may be procured at a garage or machine shop. Having severed the beater, and cut the shafts, next pull the small gears and attached pieces of flat metal off of the shafts.

Where the dotted lines in Figure 1 indicate, drill holes through the metal strips, using a drill which will make a hole through which the gear shafts may pass. Bend the metal strips back of the holes, so that when bent inward they will appear as in Figure 2. The two holes must be in the same line. Now take a small piece of copper wire, or wire of any metal which can be easily

soldered; form two fittings like the one illustrated in Figure 2.

Procure two washers of the size that will have a hole like the holes you have drilled in the strips. Clean the shaft ends and also the washers and after placing the gears and their attached strips back on the shafts, solder the washers on the end of each shaft as shown in Figure 3. Care must be taken in this step, that the strips are not soldered also. Solder the wire fittings on the strips as shown in the same figure. These must be so placed that the pointed end will revolve as a point and not off center. This completes the winder.

Figure 4 shows a possible alternative whereby the wire fitting may be wired onto the strips, if these be made of aluminum, which can not be soldered as easily as other metals. If the constructor wishes to avoid soldering the washer as well, this may be retained by heating over the end of the shaft.

Many winders are used with the original handle, but some may desire a more comfortable grip. For them, the pistol grip shown in the drawing is suggested.

This winder is used by detaching the "S" hooks from the nose of the model, and hooking them to the wire fittings on the winder. Then, while an assistant holds the propellers, the person holding the winder walks away from the model until the rubbers are stretched at least twice their normal length. Rubbers hold more twists when stretched. He then turns the winder, noting that he must wind so that the propellers will revolve

correctly. If it is necessary for him to wind backwards in order to twist the rubbers correctly, he should invert the model and reattach the "S" hooks, so that he can wind in the easiest manner. As he winds the rubbers, he should slowly advance toward the model, so that as the rubbers are fully wound, he is working at the nose. The "S" hooks are then reattached to the model, care being taken to prevent the rubber strain from breaking the model frame. The model is then launched in flight.

Geared winders are a wonderful aid to the sport of model flying, and every model flier should make and use one.

Science News-Letter, September 3, 1927

AVIATION

More Power For Planes

The addition of two gears and a small "impeller" to an airplane engine now makes possible higher power at all altitudes, which in turn means higher speeds or heavier loads. This is accomplished with a built-in supercharger developed at the research laboratory of the General Electric Company, after the design of Dr. S. A. Moss, it was announced.

Previously, the supercharger has only been used extensively in military airplanes, and then only as an attachment, but now several large manufacturers of engines have adopted the new supercharger as an integral part of their motors built for commercial planes.

"The supercharger does exactly the same for the airplane engines as the oxygen tank does for the pilot when flying at high or unusual altitudes," stated Dr. Moss, "that is, it prevents suffocation. At 20,000 feet there is but half as much oxygen in the atmosphere as at sea level. Naturally an ordinary engine loses power rapidly as it ascends but with the supercharger in use, this is not the case."

The new device is being used on the Wright "Simoon" engine, and the newly developed "Cyclone" for heavy duty. These engines develop 350 horsepower and 550 horsepower respectively. The Pratt and Whitney "Wasp" and "Hornet" engines also use the device, and develop 425 and 550 horsepower. All these engines weigh from 1.3 to 1.6 pounds per horsepower.

Science News-Letter, September 3, 1927

The Romans learned to use cotton through their wars in the East.

