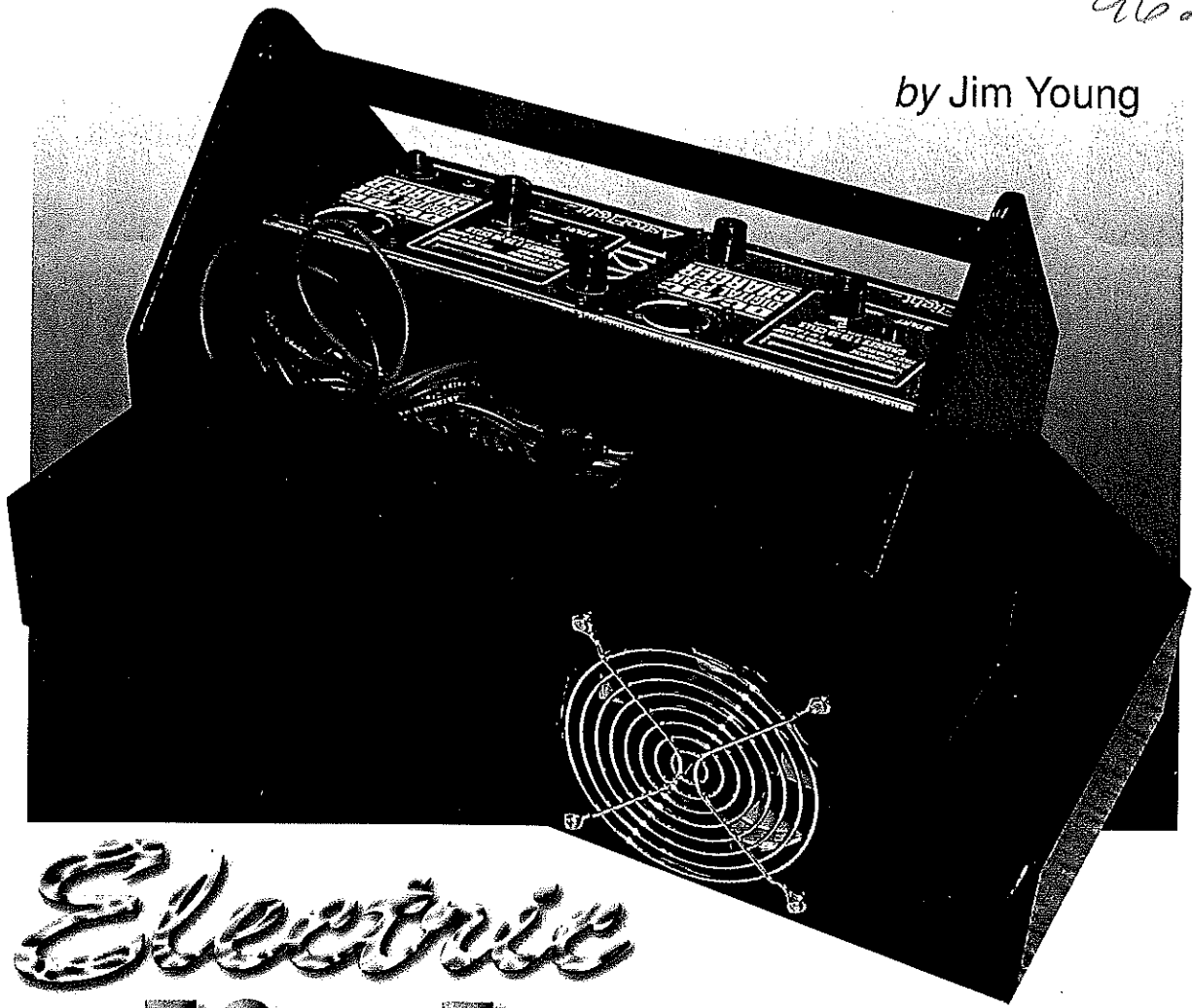
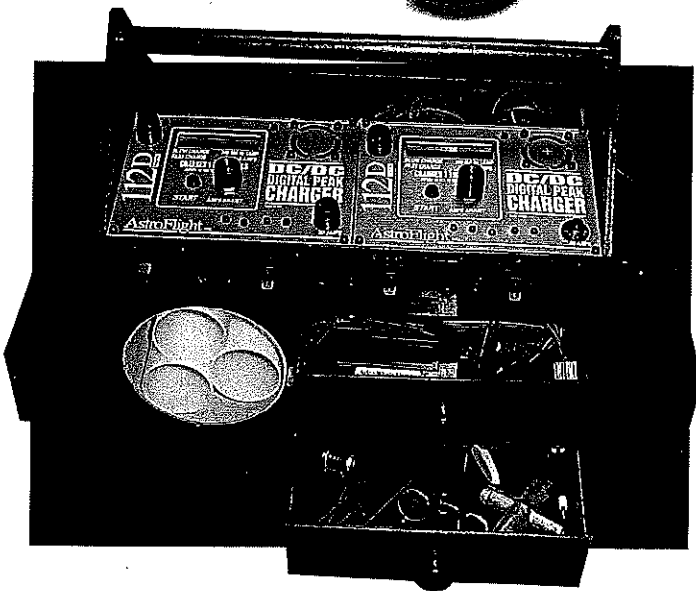


by Jim Young



Electric Flight Box



The Electric Flight Box has room for two transmitters, two chargers, tools, and batteries. The front power panel controls chargers and battery cooler, and even has auxiliary 12-volt output.

SINCE I STARTED in this hobby, my modeling interests have changed from glow power to electric power. The support equipment for electric is much different from "wet"-power gear. The problem is that no one makes a flight box designed for electric fliers. When I go flying, I typically have to carry one or two transmitter cases, a case that holds one charger and tools, another charger, and battery packs, all in addition to my models!

When Bob Kopski described his "Big Blo" battery cooler in the February 2002 RC Electrics column, I said "Great! Just what I need—another thing to carry to the field!" That was the final straw; I had to come up with something better. The result is the "Electric Flight Box," which will carry all this stuff in one handy package.

This flight box has room for two transmitters, two chargers, battery packs, and tools, and it has a built-in battery cooler. The front power panel controls the chargers and fan, and it even has an auxiliary power-output jack. An external deep cycle battery supplies power.

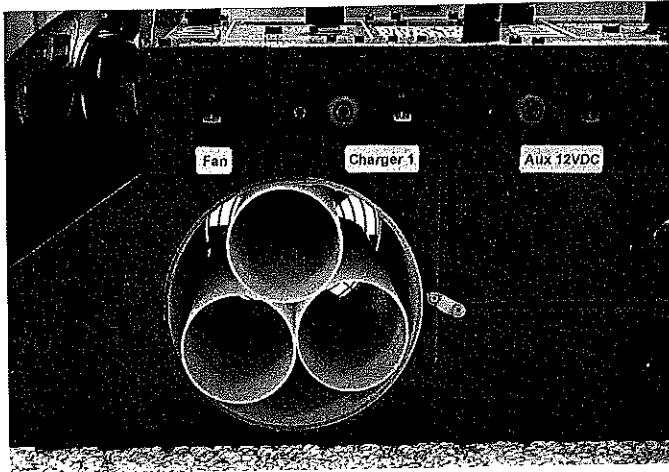
This design centers around two AstroFlight chargers. You can easily adapt the top tray to your particular brand of charger or to a single charger. If you need to change the distance between the

main uprights to accommodate your chargers, you can resize the drawers.

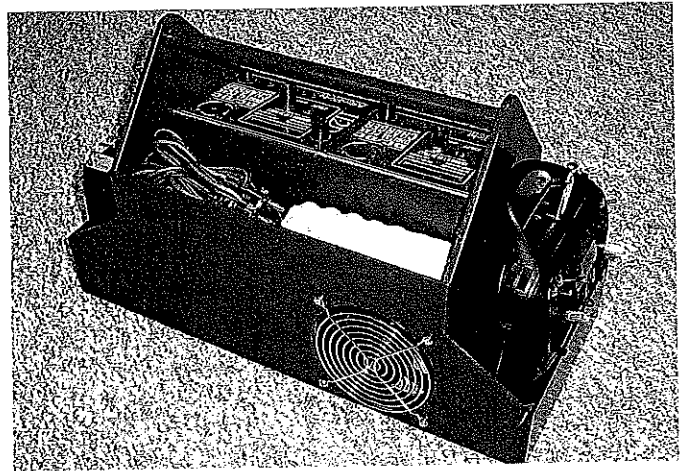
The end pockets are 3 inches deep and will accommodate most brands of transmitters. I have found one transmitter that won't quite fit, so measure yours to make sure. If you need more space for your transmitters, you only need to extend the front panel, the

rear panel, and the bottom. Another option is to sacrifice some of the drawer space and install a gel cell to power the flight box, but this would make it much heavier.

The box is constructed mainly from 1/4 and 1/8 aircraft plywood, which is readily available at your local hobby shop or from one of the modeling wood mail-order companies. I looked at the local

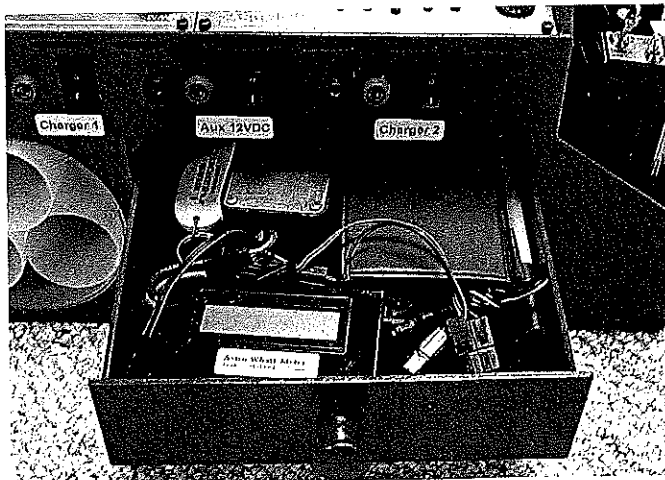


Built-in battery cooler is powered with a 12VDC fan. Various-size tubes are pigeon holes for multiple battery packs.

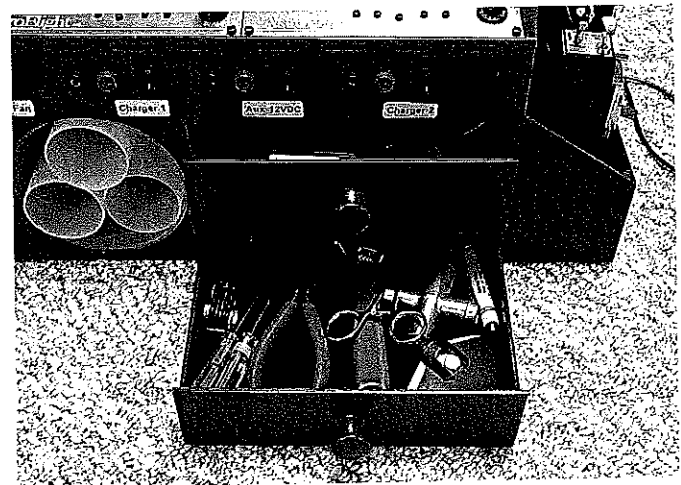


Rear view shows battery-cooler fan with grill. Battery tray on top has room for several battery packs and charging cables.

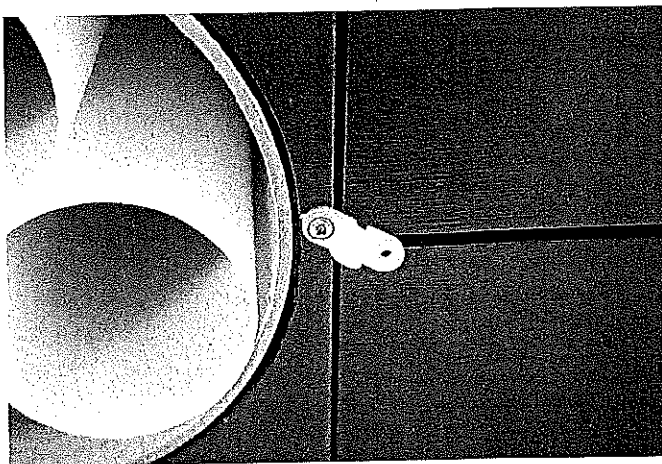
Photos and drawings by the author



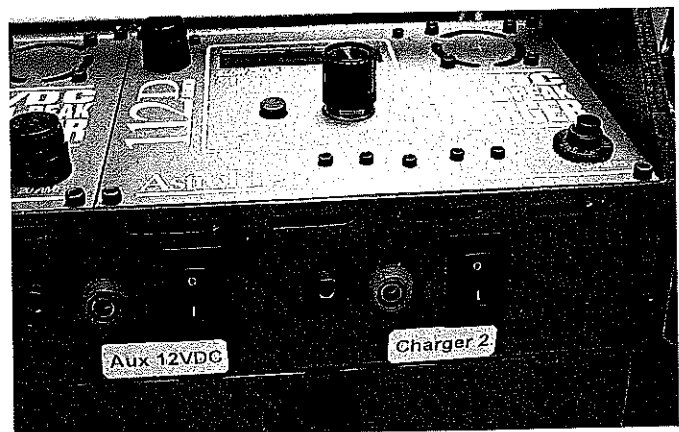
The drawers are deep enough for a variety of tools and support equipment. Simple wooden knobs give a finished look.



The author keeps his normal modeling tools in this lower drawer. The upper drawer is used for more delicate items.



Nylon landing-gear strap makes simple latch to keep drawers closed during transport. Typically ingenious modeler's idea!



Front power panel and charger installation. Note charger cooling slots in panel. Lay out power panel to support your chargers and your needs.

lumberyard, but the aircraft plywood is much better quality and worth the extra cost. A complete materials list is on the drawings.

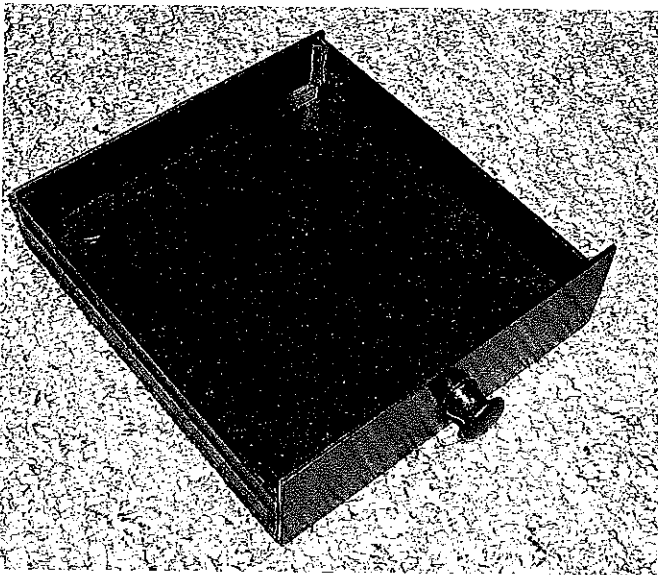
Follow the measured drawing and the cutting guide to make a "kit." The figures I have provided are finished measurements, so take the width of your saw blade into account when you are cutting. I borrowed a friend's table saw to cut the $\frac{1}{4}$ plywood and used my band saw for the rest.

Sand all the edges square, and make sure that duplicate parts (e.g., the front and back panel) are the same size. Stack the main uprights and drill the $\frac{3}{4}$ -inch-diameter hole for the carrying handle.

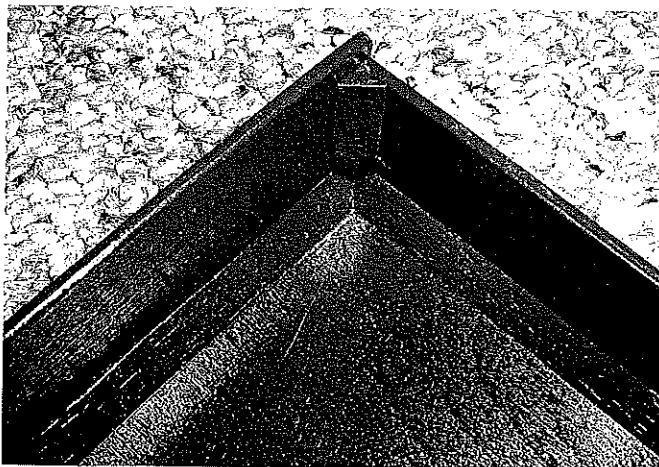
Mark the location of the drawer slides and the tray bottom on the main uprights and the main divider. Mark the location of the uprights and the main divider on the front panel, back panel, and bottom. Use epoxy or carpenter's glue for the assembly. You can use cyanoacrylate glue for the balsa parts. A variety of clamps will be helpful during assembly.

Start construction by gluing $\frac{1}{2}$ -inch triangle stock to the main uprights and the main divider. These pieces are to support the tray bottom and the drawers.

Glue the uprights and the main divider to the bottom. Use clamps or small brads to hold them together while the glue sets.



Tool drawers are constructed from $\frac{1}{8}$ plywood. Scrap balsa shims on sides help center the drawer in the opening.



The $\frac{1}{4}$ balsa triangle stock reinforces corners. It also helps keep small parts from getting trapped in the corners.

Glue the $\frac{1}{8}$ plywood front and rear panels in place next, and the structure will quickly start to look like a flight box.

Clamp the bottom to your workbench so that a twist is not introduced to the box. Several pipe clamps will be helpful with this step. The front and rear panels should overhang the bottom by $\frac{1}{8}$ inch on each side.

Glue the transmitter-pocket end panels in place. They fit between the front and rear panels and overlap the bottom. The joints between the end panels and the front and rear panels are reinforced with $\frac{1}{4}$ -inch triangle stock.

The battery cooler uses a standard 4.75-inch PC cooling fan. Fans and grills are available at your local RadioShack or from various mail-order electronics suppliers. Make sure you get a 12-volt DC fan; they also come in AC versions that won't work too well off of a car battery! Attach wires to the fan, and fit it in place in the battery cooler area.

You may need to trim the $\frac{1}{2}$ -inch triangle stock in this compartment, depending on the type of fan you choose. Drill mounting holes for the fan through the rear panel. The fan and grill will be secured to the rear panel with appropriate nuts and bolts at the end of the project.

With the fan set in place, glue the tray bottom in place. Drill a hole in the tray bottom so that the fan wires can run into the charger compartment.

Add a $\frac{1}{8}$ x $\frac{1}{2}$ -inch plywood rail to the rear of the front panel for mounting your charger(s). I use two AstroFlight 112Ds, which have an aluminum panel mounted in a plastic enclosure. All of the charger "works" are mounted to the aluminum panel, so they can easily be removed from their enclosures and bolted into the flight box.

Position the rail so that the top of the charger is flush with the top of the side panel. This will prevent having a place for dirt to collect. Drill a hole in the tray divider for the wires that will connect to the external battery. These wires are simply coiled up and stored in the battery tray. Using your charger(s) as a guide, position and glue the tray divider in place.

Add another $\frac{1}{8}$ x $\frac{1}{2}$ -inch plywood rail to the top of the tray divider to support the rear of the charger(s). You may need to carve out the mounting rails to fit your chargers. I have two "identical" chargers, but I bought them several years apart; one has a fuse and the other has a large circuit breaker that required a cutout in the mounting rail.

Trial-fit your chargers, and drill mounting holes in the rails. If you only have one charger, add another $\frac{1}{8}$ -inch divider to separate it from the rest of the charger compartment.

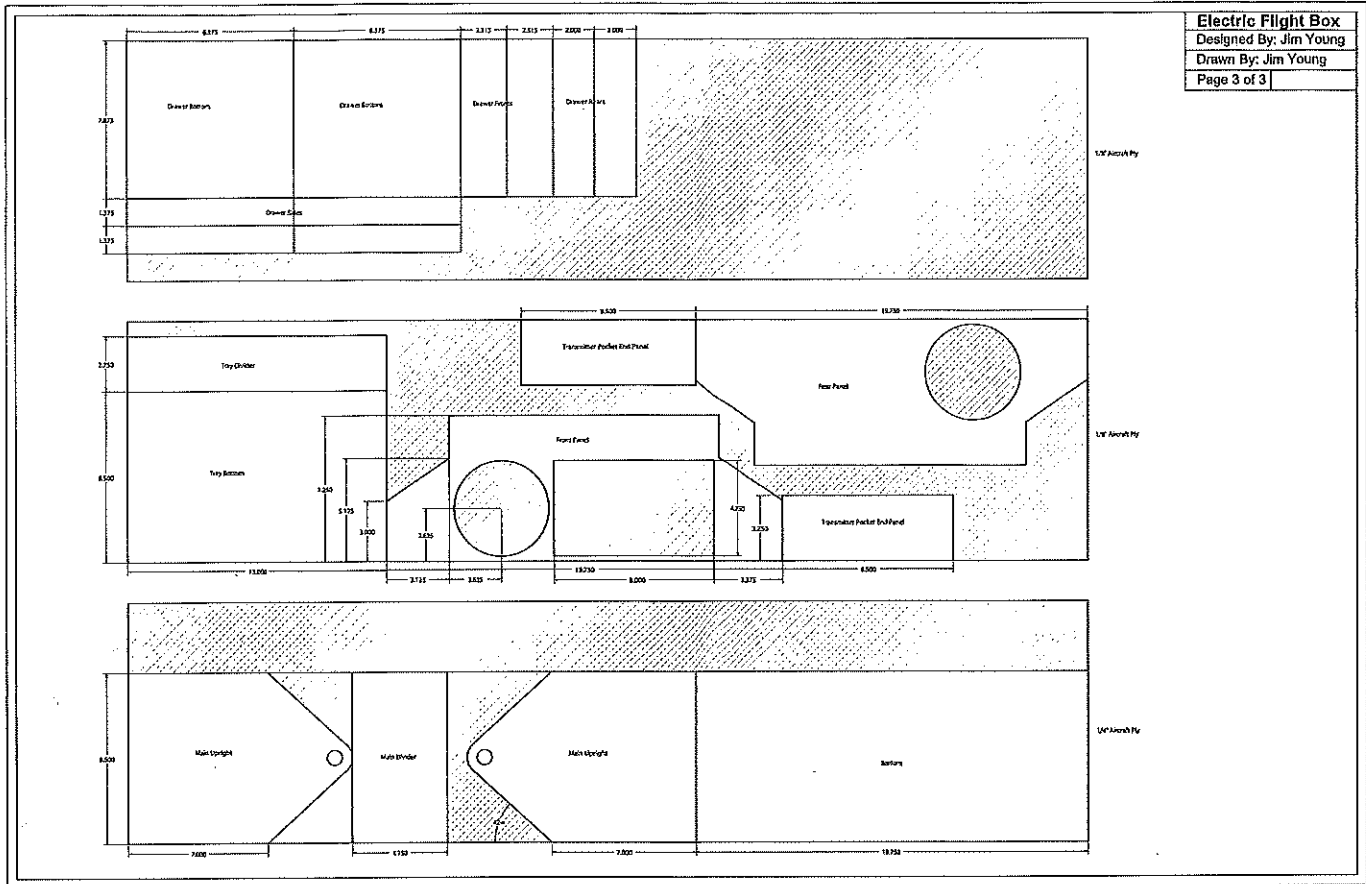
Now is the time to lay out the power panel. The drawings show the layout I used for the switches and jacks I had. Various switches and banana jacks are available at your local RadioShack (www.radioshack.com) or via mail order from Digi-Key (www.digikey.com). I recommend a rocker-type switch because it is less likely to be bumped or damaged during transport.

Make sure your switches can handle the input current requirements of your chargers. I used switches from Digi-Key (part SW354-ND) which snap into the front panel and can switch 16 amps.

Lay out the front panel. Remember that this is a custom flight box; make it to suit your needs. It can be as simple or as complex as you like. I have a switch to turn on each charger, a switch to turn on the cooling fan, and a switch to turn on the auxiliary output.

Banana plugs and jacks are rated up to 10 amps, so they can easily deal with typical charging currents. I made several cables to go from the banana jacks to my battery packs. The banana jacks should be spaced at $\frac{3}{4}$ inch so you can use standard dual plugs. The AstroFlight chargers have cooling fans, so add some slots for ventilation. Add the $\frac{3}{4}$ -inch-diameter dowel rod handle.

You assemble the drawers next. Study the drawings closely. The drawer front and rear are glued to the edge of the bottom, and the sides are glued to the top of the bottom. Add $\frac{1}{4}$ -inch



Electric Flight Box
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triangle stock to all the inside corners, for reinforcement and so small parts don't get trapped in the corners.

Add the drawer knobs. I picked up some basic wood drawer pulls at the local home-improvement store for less than \$1 each. The drawers are designed with a 1/16-inch clearance on each side, so add scrap-balsa shims to the sides and rear to help center them in the openings.

After final-sanding, apply a couple coats of primer and exterior-grade paint or stain. After the paint has dried, rub a candle on the drawer slides and drawers to prevent them from sticking. Wire and mount your chargers, and bolt the fan and grill in place. Use a landing-gear strap as a latch to keep the drawers shut when you're carrying the flight box.

Finish the battery cooler with various-size tubes. Be creative here. I used the plastic tube from a roll of plotter paper and a large cardboard mailing tube. If you use cardboard tubes, treat the edges with thin cyanoacrylate to keep them from getting damaged.

Last, add some strips of Velcro (the hook side) to the bottom to keep your box from sliding around in your car.

This flight box has made getting to the flying field much easier and quicker. At the field, I don't have a rats' nest of wires, chargers, and tools. I hope you enjoy your custom electric flight box as much as I do. *MA*

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(Editor's note: Because of charging safety concerns with Lithium-Ion and Li-Poly batteries [See Bob Aberle's "Introduction to Lithium-Polymer Batteries" article in the May 2004 MA], we do not recommend using the Electric Flight Box's internal charging receptacle feature for charging those types of batteries. However, it is ideal for use with Ni-Cd batteries, which are still very popular with electric modelers.)

