

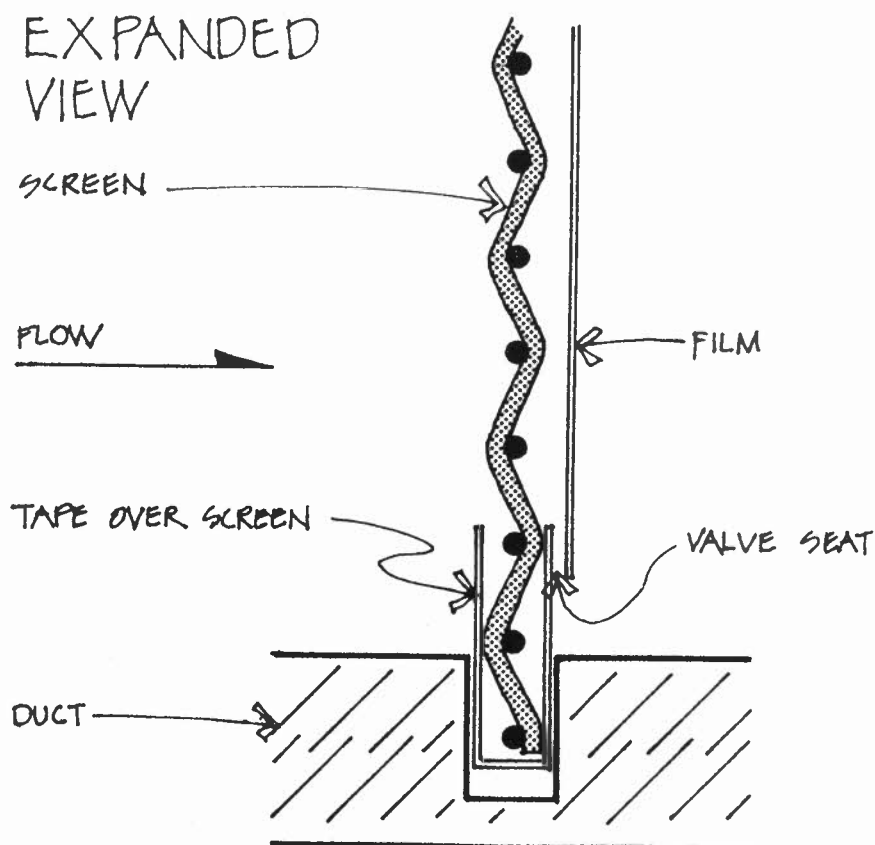
# How to Build A Back-Draft Damper

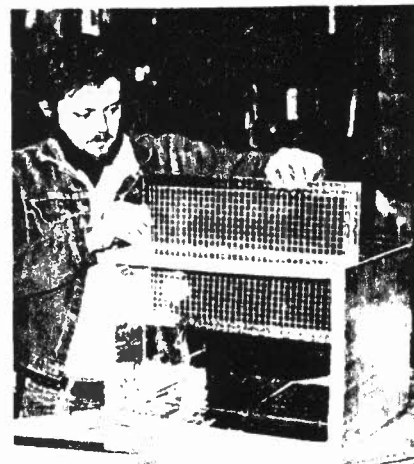
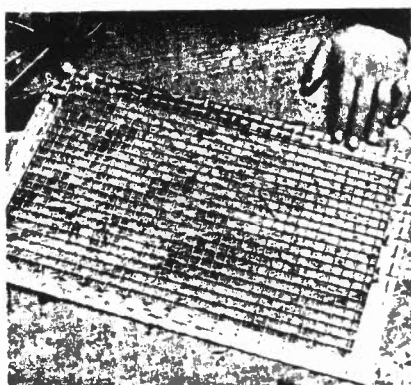
By John C. Christopher

One cause of large thermal losses in warm-air space heating systems is the lack of an effective back-draft check valve. When there is a difference in air temperature between the collectors and the living space (or the thermal storage unit) natural convection will occur in a loop. The cooler, denser air in the collectors drops down through the ducting and into the living space or storage area. Warmer, internal air rises to replace it. The simple

back-draft damper described here prevents this reverse thermosiphoning process.

To make the back-draft damper you will need tin snips, a utility knife, and a straightedge. Buy 1/2-inch soldered hardware cloth (a woven wire mesh available in most hardware stores), aluminum duct tape (made from aluminum foil with an adhesive applied to one surface and available in most heating supply stores), and PVF teflon film. PVF or DuPont





Tedlar is a high-temperature, extremely strong material. Use a 1/2-mil (0.0005-in.) film for horizontal airflow applications. For a vertical duct requiring greater rigidity, use 4-mil (0.004-in.) film. (Small quantities of the 1/2-mil film are available for 25¢ per square foot plus \$1 handling from CSI, Inc., 68 Charlonne St., Jaffrey, NH 03452.)

First cut the hardware cloth 1/2 inch longer and 1/2 inch wider than the rigid fiberglass duct to be fitted.

Tape a 1-inch band around all four edges of the hardware cloth with the metallic aluminum duct tape. Turn the mesh over and place a second band around the perimeter of the opposite side. Firmly press the two tape layers together.

Cut a section of PVF film 1/2 inch shorter in both dimensions than the duct.

Next, staple and tape the plastic film over the hardware cloth. The film should be evenly spaced from all sides of the edge of the mesh and should not be creased or deformed.

Cut a small opening in the top or side of the duct at the point where the damper is to be installed. This opening should be large enough to reach into the duct and cut a 1/4-inch-deep groove around the entire interior perimeter. Slide the damper into this groove with the plastic film facing the downwind side. Check the smooth operation of the unit before sealing the cover in place.

When closed, the film must contact the screen. A tight seal eliminates leakage. ☼

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