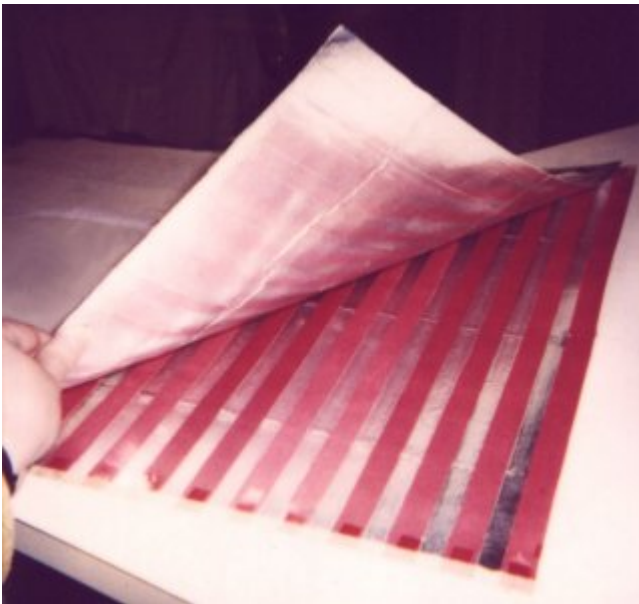


ALLEN'S HALLOWEEN PAGE

http://softlyspokenmagicsspells.com/halloween/mat_switch.html

Mat Switch

A mat switch allows you to trigger an effect (or disable one) when someone steps in a certain spot. They're thin and generally about three feet wide so people won't step over them. They can go under carpet or be taped in place and painted the same color as the floor.



My home-made mat switches are made of poster board and aluminum foil. I developed this method through trial and error after taking apart a membrane number pad to see how it worked. The top and bottom layers of poster board have aluminum foil glued over their entire surface with wires attached. The middle layer has holes in it and separates these layers. When the mat is stepped on, the upper layer pushes through the holes and makes contact with the lower layer, completing an electrical circuit.

The holes in the separator need to be about a centimeter wide (3/8 inch). The width will affect the sensitivity, i.e. the amount of weight needed to turn the mat on. The

easiest way to do this is to cut inch-wide strips of poster board and tape them down across one of the foil sides like louvers. Tape them at their ends along the edge of the mat. Tape over the last centimeter of foil along these edges to prevent contact at the edge of the mat where the layers aren't well separated by the strips. Also be sure the louvers at either end extend out past the top and bottom layers at the extreme edge, otherwise the end of the top layer could fold over and make contact.

If the mat is to go under carpet, it needs to be MORE sensitive because the carpet spreads out the force of the foot. If the sensitivity is too low, it's possible for these mats to fail to trigger when a small child steps on them.

To attach wires to the foil, strip the insulation off about 6 inches of stranded wire, spread out the strands to increase the surface area, and tape them down to the aluminum foil under one of the spacer strips. (You can't solder to aluminum foil; it won't stick.) In the electronics section of your local hardware store you can find a special type of grease which is designed to keep aluminum-to-copper electrical connections from corroding due to dissimilar metal chemical reactions. I've never used it, but I think it would help make a better and longer-lasting connection between the wire and the aluminum foil.

It's not as easy as it sounds to glue aluminum foil to poster board. The foil needs to be glued evenly and completely so every square millimeter is stuck down. The glue needs to remain sticky after it dries. That way, if the foil comes loose in a spot, it will repair itself when it's stepped on. I used 3M spray adhesive #72, but it's hard to find. Most hardware stores stock #77. It will probably work too, but I haven't used it. Spray it on thick, smooth it out with a brush if necessary, and then roll the aluminum foil on. (Take the roll of foil out of its box.) I'm told you can buy metal-coated cardboard from [American Science and Surplus](#), but I've never used it to make mats so I don't know how well it will work. If you make a mat with it, [E-mail](#) me and let me know how it works.

At first, the mat won't turn off. It sounds counter-intuitive, but you have to STOMP on it to flatten out the aluminum foil and mold the mat to the floor. (I bought a rubber mallet just for this.) If you move the mat, it will probably need to be stomped again. Tape it down to the floor so it won't move or get sand under it. The floor needs to be fairly flat and smooth; tile is not good. I've had mixed results putting a mat an inch or so underground inside a plastic bag. It can be made to work, but water seeps in before long and ruins the mat. Maybe lamination would work. [WebMistress](#) has waterproofed the pads for use outside on cement by simply covering them and taping them down with six-inch-wide plastic packing tape.

I've never run 120 VAC through one. It's probably not a good idea, a fire and electrocution hazard. Run 6v or 12v DC to an appropriate relay if you need to switch 120 VAC.

You might think that the poster board would wear out quickly, but I've had a mat like this under carpet in my hallway since about 1992. I walk on it several times a day.