# clinic

BY JEFF SANDLER

Attention please

I'm doing research on attention spans for my master's thesis. The project involves seating subjects in four isolation booths positioned at 90-degree intervals around a small stage. The subjects watch a performance on the stage from their position inside the booth, filling out a critique. They are instructed to leave the booth when they loose interest in the performance, depositing the critique in a box provided for the purpose. I need to know the exact time the subjects leave their seats. Do you have a circuit I can use to signal their standing? I am using metal folding chairs so a simple pressure switch will not work.

C.T., New Britain, CT

I think you'll find this circuit to your liking. Capacitance is the key to the circuit's operation, so there are no moving parts involved. Two small metal disks insulated from, but

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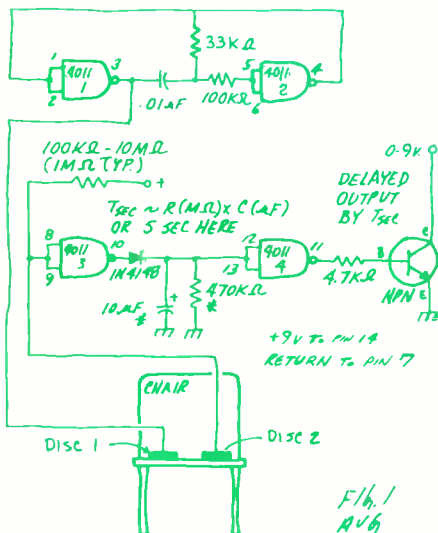
mounted on the chair form a capacitor when a subject is seated on the chair. A low power square wave is coupled through the body capacitor and converted into a dc level, which holds an NPN transitor in its off state. When the subjects rise, the signal path is broken, and after a few seconds, determined by the 10 mfd capacitor and 470K resistor, the transistor turns on, closing a relay. You can use the relay contacts to activate a signal or disable a

binary counter. The delay prevents false alarms from subjects shifting their positions in the chairs. The plates should be about six square inches in area. Do not use shielded cable between the plates and your alarm circuit. The 100K to 10M resistor connected to the gate input sets the sensitivity of the circuit. You can substiute a variable resistor if you'd like.

Pins and needles

I'm just getting started in electronics so I'm not ready to printed circuit boards quite yet. Perfboard works well for simple circuits, but I get into trouble with more complicated circuitry. I usually end up with a few wires that have tò be added. I'd like to push them through the perforations, but they just bend and jam. Any suggestions?

R.U., Buffalo, NY

Here's a trick I came across quite by accident. You can use common pins or needles to make probes that will easily slip through even the smallest board perforation. As it happens, most pins and needles take solder quite well. So, you should have no problem soldering your wire lead onto the pin once you've gotten it into place. You can also use pins and needles to add connections to PC boards. The nicest thing about them is that that they're rediculously cheap. You can buy a hundred or more pins in most variety stores for less than a dollar.

Downcounter update

I was about to congratulate you on the forthright simplicity of your projects when I came across the Downcounter in the June issue. Where can I get 4543 ICs? They're not available from any source I know. What about pin numbers for IC connections? Where does the Vc supply come from? And finally, are the LED readouts common anode or common cathode?

R.E.G., Garden City, NY

The Downcounter was the most complex

circuit to appear in Modern Electronics, and we did make a few goofs in the diagram. First, the 4543 ICs are manufactured by Motorla and Solid State Sicentific, so you should be able to get them through a local distributor. As far as pinouts go, here's the data on the three types of IC used in the

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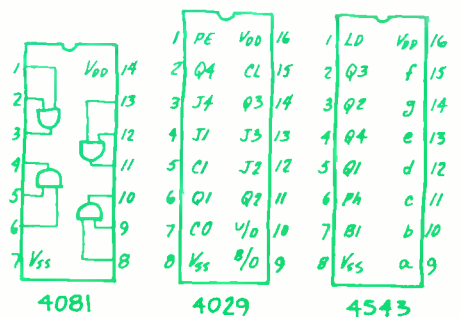
project. The Vc supply rail is taken from the positive terminal of the 220 mfd capacitor at the output of the bridge rectifier. The LED readouts are common cathode. Sorry about the confusion.

Timer is cheaper

My wife has become interested in African Violets and wants to raise them to sell to friends and neighbors. She needs to keep the plants under fluorescent plant-grow bulbs for between 12 and 14 hours a day. Is there a simple electronic timer I can build to control a pair of 40-watt fluorescent bulbs?

R.S., Redford, MI

Although huge strides have been made in electronics during the last few years, there are times when old fashion mechanical devices work better. And this is one of those times. While you can build a nifty timer using an oscillator and divider, or even a clock chip, a simple electric timer will do the job better, and at less cost. A 24-hour timer to do the job you want done can be purchased in almost any hardware or department store for less than $10. The Radio Shack 63-862 timer plugs right into the wall socket and has a recepticle into which you can plug the lamp fixture. It costs about $7.