SQUELCH THAT BLURB

Commercial killer is triggered by flashlight

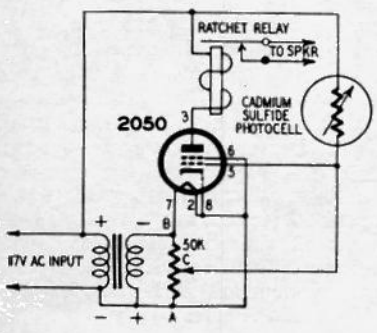
The light-sensitive unit — photocell is held in place by rubber grommet.

By A. A. SCHULKE

MOST of us are fairly reasonable folks and are willing to accept a certain amount of advertising in exchange for favorite TV programs. In many cases this trade is easy to make—the ads are even interesting. Unfortunately, however, some advertising is downright objectionable.

Probably the most aggravating are those sponsors who employ drill-sergeant-voiced announcers and pound their messages across by sheer volume; the long, interminable ads so diabolically worded that you think they are going to stop with the next sentence—but never do; and the string of "free-loaders" who contribute nothing but a series of five or six ads during a break between programs you "paid" to watch. These are the ones this "commercial killer" was designed to eliminate. With just a simple flick of a flashlight, the TV set is silenced and the sound remains off until another flick of the flashlight restores it.

The operation of the device is remarkably simple and it uses an almost irreducible minimum of parts. The entire unit may be easily built on a 4 x 6 x 2-inch deep chassis and can be made still smaller if desired.



1—50,000-ohm potentiometer; 1—chassis, approximately 4 x 6 x 2 inches deep; 1—2050; 1—octal socket; 1—filament transformer, 6.3 volts at 1 ampere; 1—ratchet relay, 115 volts ac (Guardian RC-100-GR or equivalent); 1—crystal photocell, RCA 6694-A or equivalent.

Fig. 1—The light-sensitive circuit.

The circuit is shown in Fig. 1 and operates directly from the power line. When the plate is negative, the thyratron cannot conduct; when it is positive, the tube can conduct whenever the bias on the grid is such that it will permit it to do so.

The transformer is connected so that whenever the plate is positive, the secondary will be negative at point B and positive at A. Since the electron flow through the resistor will be from B to A at this time, point C will be more negative than A and a negative bias will be applied to the grid. This bias is easily set by the position of contact C. When C is near B the tube has maximum bias and will not conduct. But as C is moved toward A the bias decreases until the tube conducts whenever the plate is positive. The position of this contact is adjusted between these limits so that the tube will not fire until a light of predetermined intensity falls on the photocell.

When light strikes the photocell, the current passed by the cell flows through the resistor from A to C and opposes the current normally flowing in the opposite direction. This decreases the grid bias, the tube conducts and the relay is energized. Since the relay is energized only when the tube conducts, an impulse type ratchet relay was selected for this application. One flash of light on the photocell provides a current pulse to the relay and opens a set of contacts. These contacts then remain open until the next impulse closes them.

The photocell selected for this merits special mention because it made possible the simplification of this device to only five components. This is the new cadmium sulfide crystal photocell and has really remarkable output for its size. Physically, it is a tiny cylinder measuring less than ¼ inch in diameter and ½ inch in length. It requires no socket and can be easily mounted by pushing it through a rubber grommet in the chassis. It has a maximum voltage rating of 200 and despite its small sensitive area (less than 1/32 x 1/32 inch), will produce a 300-μa output at 90 volts with 100 foot-candles of illumination. The average two-cell flashlight at 15 feet produces about 10 foot-candles. With the crystal photocell connected as shown in Fig. 1, it has an output of about 15 μa—more than enough to operate the tube.

The construction of the unit is fairly straightforward and parts placement is not critical. There is one possible source of difficulty. If the transformer is not wound with polarities as shown, the tube will conduct each time the plate is positive and the bias control will have no effect. Reversing the secondary connections of the transformer will correct this.

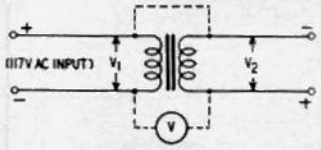


Fig. 2—Testing transformer polarities —those shown in diagram are additive. Top dashed lines are the connection.

Transformers with the polarities shown in Fig. 1 are called *additive* and, if a voltmeter is available, this can be easily checked by connecting the transformer as shown in Fig. 2. If the polarities are correct, the voltmeter will read the *sum* of the primary and secondary voltages. If not, the voltmeter will read the *difference* between them.

It is desirable to connect the relay contacts in series with one of the wires to the speaker voice coil. This will silence the speaker completely when the contacts are open. The two wires from the relay contacts may also be connected across the speaker terminals with small battery clips. This method will reduce the volume considerably but will not completely eliminate the sound.

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