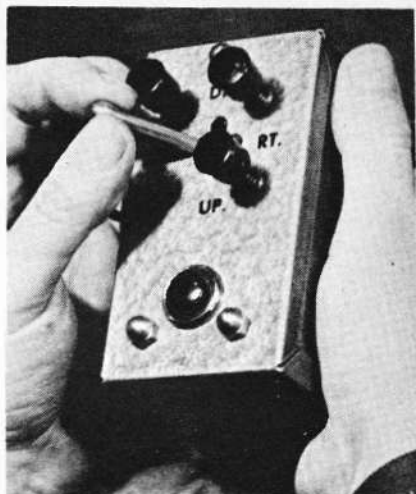


RADIO CONTROL REVIEW:

Ectron's Multiple Control System



"Rapi-Trol" control box.

Since there are so many neutrals, the makers hit upon the idea of putting three of them to other use, so there is only one neutral where everything is off—so to speak. A rotary switch on the escapement shaft connects three auxiliary circuits, in the three neutrals that are used; here, though, the escapement is not energized, but the auxiliary circuits remain closed till the escapement is stepped to the one "off" neutral.

The escapement itself is an outgrowth of the "Ecco" multiple escapement, but has been much refined, and the current-saver and auxiliary circuits added. While the Ecco unit drew rather heavy current, the present Ectron version will hold a control position with a drain of only about 140 ma., when used with 3 V. (3 or 4½ V. are recommended). The coil draws about 700 ma. for a small fraction of second, before current-saver cuts in.

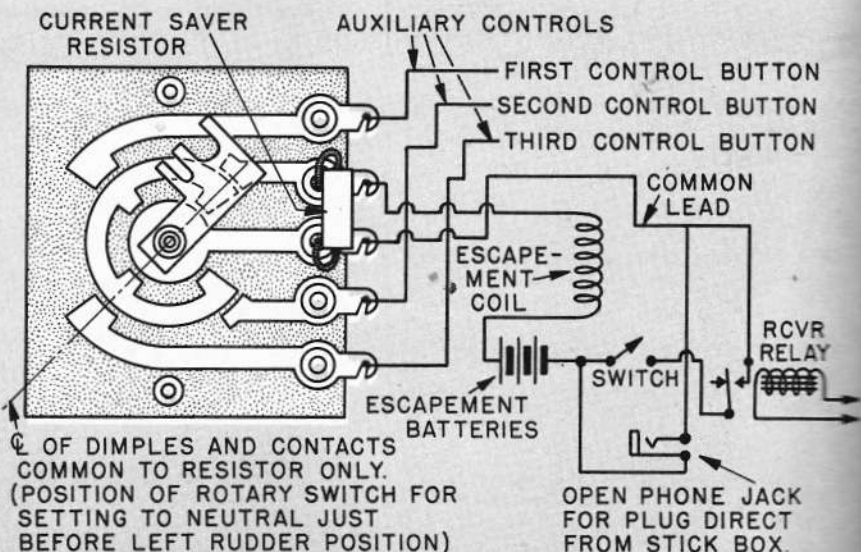
All three of the auxiliary circuits are closed briefly every time the escapement wheel rotates. If you are using a motor-actuated extra control, as for example a throttle on the engine controlled by an electric motor, this does no harm, as the throttle-drive motor would receive a short pulse of current in each direction, on every escapement revolution, so would not change its position. If you want to use magnetic controls,

■ As something of an innovation in our Blue Ribbon series, we concern ourselves here with the multiple control system developed by Ectron Products Co. (Smyrna, Ga.). Heart of the system is a multiple escapement called the "Multi-trol," which is actually an 8-position unit—that is, there are four active positions and four neutrals. Active positions give Up and Down elevator, and Right and Left rudder, by means of a cam-drive arrangement.

The escapement is a sturdy unit with a pressed aluminum frame, from one face of which project two music wire shafts that are to be attached to the rudder and elevator torque rods, and a rubber hook. Only a single rubber band is required for both control surfaces, and it may be a loop of ⅛-¼" rubber, depending upon the size of the plane.

Fairly heavy current is required to pull the escapement armature in reliably, but once operated, a current saver resistor is cut into the circuit, so that control positions may be held for long periods without fear of running down the battery. This is a form of self-neutralizing escapement, and you hold current on for as long as the control is required; when current is cut, the escapement goes to one of the four neutrals.

Wiring diagram and rotary switch position.



such as extra escapements, a simple delay circuit of a relay with a fairly high-capacity electrolytic condenser across it will do the job.

The four main control positions are selected in a set sequence, of course, and you *could* (with a lot of practice) do the selecting with a plain pushbutton. However, to make the system much more foolproof, Ectron has developed a control box called the "Rapi-Trol," which does the picking for you. This beep-box has the unusual feature of spring motor drive, so needs no batteries to run it. Rudder and elevator positions are selected by a single vertical control stick, while three pushbuttons enable the user to pick any of the auxiliary controls at will. This control box is just a convenient handful, and has been found to give well over 150 control actions for a single winding of the motor.

Of course, if you fear the motor may be running down, you can always give the key a few turns; it is situated on the bottom of the box. A governor keeps the speed of action quite constant, even when the motor is running down. Using this control box, you do not have to think at all of escapement sequence, and no control action takes more than about $\frac{3}{4}$ second to initiate. A push-button on the top of the box is used to get the controls in the model synchronized with the box, before each flight.

Specifications

Ecco Multitrol Escapement: measures $2\frac{1}{4} \times 1\frac{3}{4} \times 3\frac{1}{4}$ " overall, exclusive of control shafts and rubber hook. Weight—2.2 ozs. Gives selective positions of neutral-right-neutral-down-neutral-left-neutral-up. Three neutrals usable for other controls by means of built-in rotary switch. Control positions require about 140 ma. to hold, on 3 V., and 210 ma. on $4\frac{1}{2}$ V. Escapement coil resistance is $6\frac{1}{2}$ ohms and current-saver resistor is 15 ohms.

Ectron Rapi-Trol Stick Box: measures $2\frac{1}{4} \times 2\frac{1}{4} \times 4$ ", less protrusions, weighs 8.6 ozs. Control stick for rudder-elevator, three auxiliary control pushbuttons, and Indexing button on top of box; spring motor winding key is conveniently positioned on the bottom.

