

R.C. fan

controller box

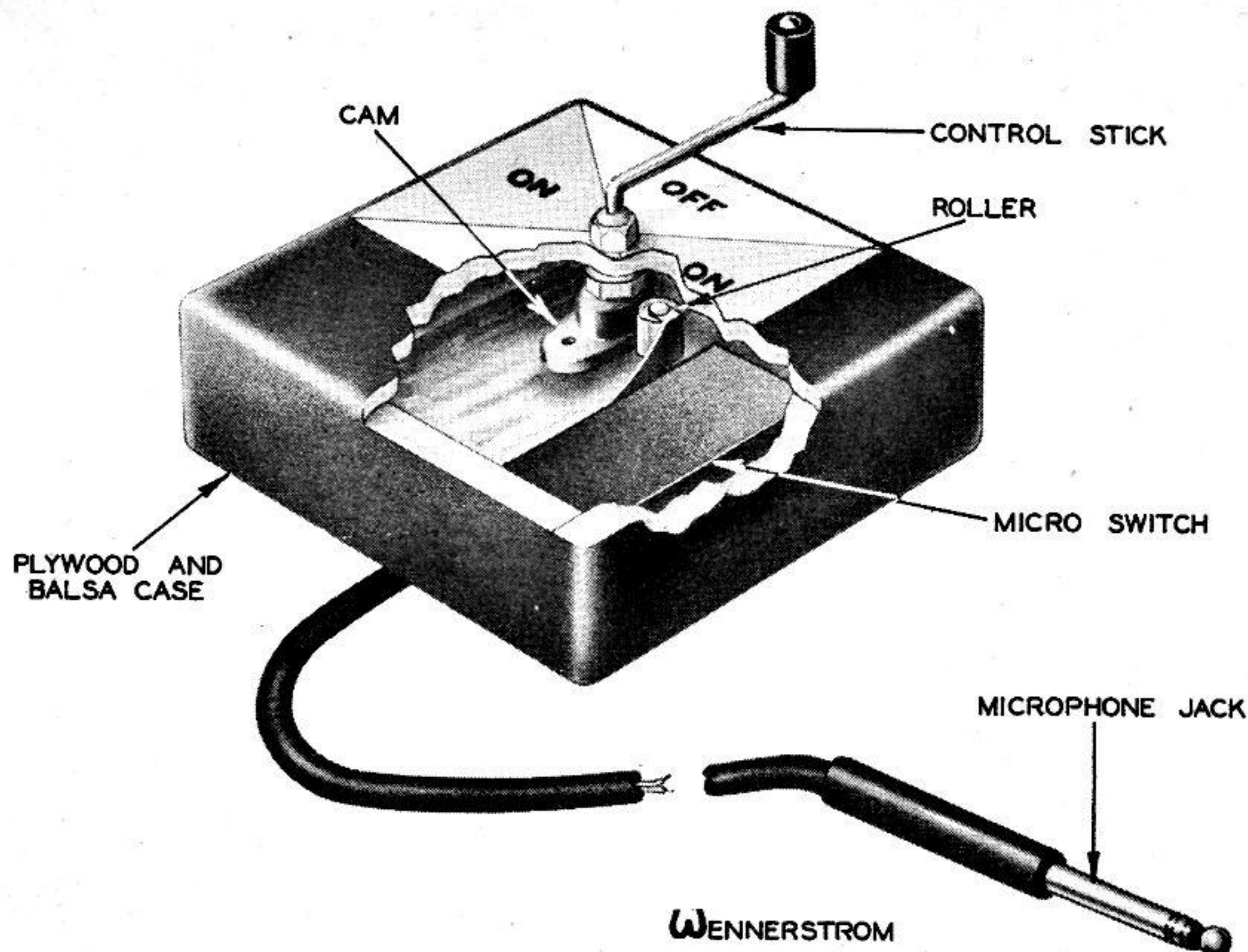
by E. J. BROWN

► After flying gas-powered free flight models for 15 years, the writer decided to try radio control, mainly to keep from losing models in the strong Southern California thermals. After digging into the back issues of the model magazines and reading all available articles on radio control, I decided that a simple receiver-transmitter-escapement type rudder control would be the best set-up for a new member of the now rapidly expanding radio bunch of model builders.

Upon checking for a suitable kit, I found none to fit my ideas of a simple cabin ship on the market. Then along came the plans for the *Rudder-Bug* in the May and June, 1949, issues of *MAN*. From past reading on the subject I decided that a slightly smaller ship, 62" wingspan, (*Rudder-Bug*) powered with a 19 Arden, would better suit my needs. This ship has proven extremely successful and durable, and I have now been flying this model for over a year. It has over 145 flights on it at this writing.

First flights convinced me that some sort of device would be necessary for the pilot to keep accurate track of the rudder movements which work in sequence of neutral, right, neutral, left, neutral, etc., with automatic return to neutral if there is any failure of the receiver to pick up the signal from the transmitter. It is necessary at times to go quite long periods without any control movements and also to make repeated turns in the same direction. It is quite easy to become confused or to forget the last position of the rudder when using the ordinary push button type of switch, and often insufficient time remains in which to correct an erroneous move to avoid a bad landing or to permit landing into the wind in the approved manner.

The Controller box was developed to do the brain work for the pilot and it automatically keeps track of the rudder movement by staying in sequence with the rudder; thus you always know what position is coming next by simply looking at the box, or, after a little practice, by "feel" alone. This Controller is extremely simple. It requires no mechanical or electric drives and can be adaptable to either two or four position escapements used for either rudder, elevator, or engine controls. (Continued on page 55)

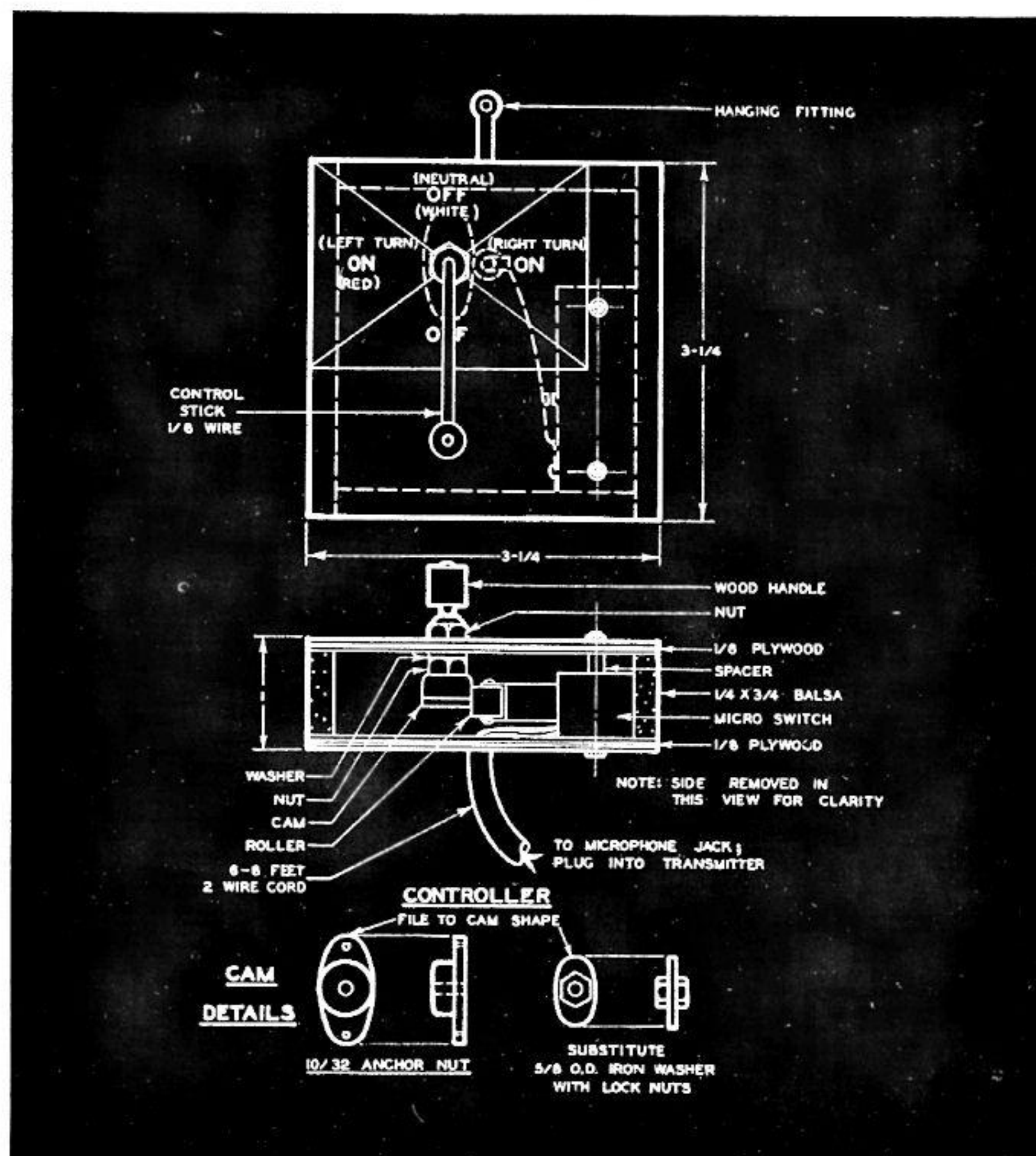
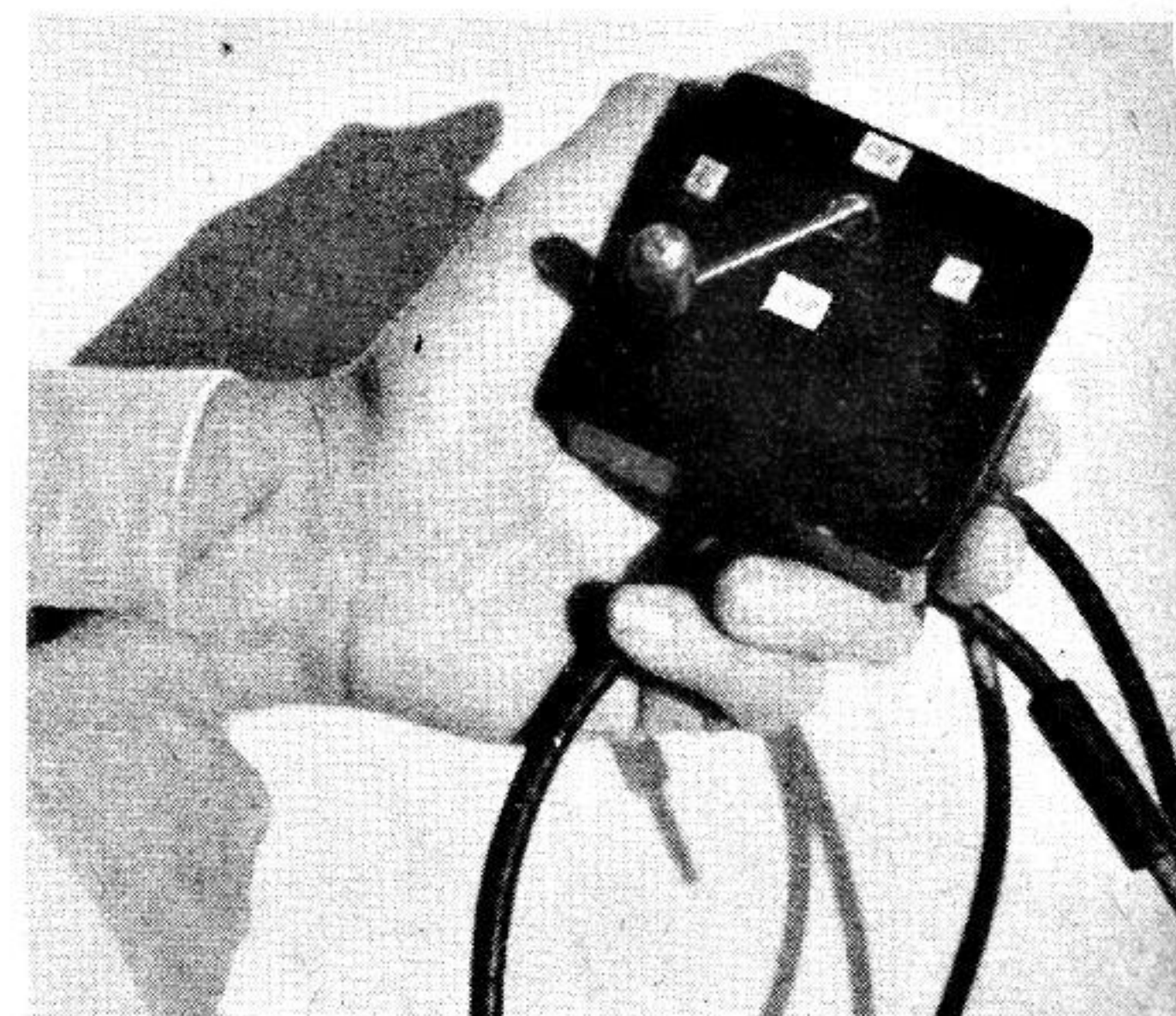


The small plywood and balsa box houses a leaf, roller-type microswitch. Stick is 1/8" wire.

If your ship flies you, this ground control gimmick is prescribed. It does your thinking for you, makes no mistakes, is automatic.



Above—Opened box displays simple mechanism. Cam on stick shaft, riding against roller, closes switch. The box fits in hand.



Right—Unit is easy to make from this drawing; parts not hard to obtain. Note position indicator painted on box face.

Controller Box

(Continued from page 33)

The control consists of a small wooden box, 3-1/4" x 3-1/4" x 1" containing a leaf with roller type micro-switch secured to the top which goes to an open circuit, or no current position, when no pressure is exerted against the roller. The top and bottom faces of the box are 1/8" plywood with the four sides cut from 1" x 1/4" balsa strip. Enclosing the switch keeps the dirt out and adjustment of the spring leaf holding the roller is not disturbed.

The control stick is in the form of a crank made from 1/8" landing gear wire and soldered to the head of a 10/32" x 3/4" long screw upon which is fastened the actuating cam. This cam is made from a 10/32" thread anchor nut procured from a local war surplus store. If the nut cannot be procured, a substitute can be made from an iron washer with a nut on each side to keep it from turning on the shaft. Very little drag is against the washer due to the extremely low pressure and movement required to trip the switch. The lobe on the cam should be flat to give a broad "on" position which is rep-

resented on the box by either right, left, up, or down, according to the position of the crank on the box. The box is held in the hand with the hanging fitting held away from the body, and the position of the crank indicates the position of the rudder as follows: starting at neutral the crank is straight up; by rotating crank to the right the rudder (assumes a right turn position. When the crank is straight down, the rudder is again neutral and the rudder then goes to left as the crank is advanced to the left hand position. Neutral rudder is again assumed as the crank is turned to the up position. Repeated turns can be made in the same direction by simply turning the crank through a full turn rapidly and the ship will not change position, due to the speed of the action, as the rudder passes through the opposite turn. The rudder will follow the crank regardless of how fast it is turned and will always end up in sequence.

To synchronize the crank to the rudder, it is only necessary to turn the crank to right or left, and observe rudder position. If reversed, back crank one quarter turn to the left and then back to the same position and control will be synchronized. This can be done while the ship is in the air if a position is skipped or a signal is missed by the receiver due to distance or dead area.

The above description applies to the self-neutralizing or two position escapement. Four position escapements require a four lobe cam to accomplish the same controls. A dual crank box is used when both rudder and elevator controls are used, one crank for each control.

This switch can easily be installed in existing equipment by substituting present push button switch with a common microphone jack fitting and installing the jack on the end of a six or eight foot #2 wire cord leading to the box. The box is in series with the B battery lead, either positive or negative.

With practice and good distance judgement, extremely accurate spot landings and good acrobatic flying can be done using this control.