EAGLE PICT-O-GRAPH* STEP-BY-STEP INSTRUCTIONS
EAGLE CODE PRACTICE OSCILLATOR

No. CP-12

EAGLE PICT-O-GRAPH KITS have been wired successfully without any knowledge of radio, and without the use of symbol schematic diagrams. EAGLE PICT-O-GRAPHS are a series of pictures faithfully reproduced from actual working models, showing the step-by-step procedure. They are simple and self-explanatory.
EAGLE PICT-O-GRAPH kits come complete with all necessary parts, including tubes. The PICT-O-GRAPH charts and instructions simplify the assembly and wiring. A careful study of these charts and instructions will enable you to identify each part and the order of placement. Do not remove any part until called for in the step-by-step PICT-O-GRAPH instruction sheets.

READ INSTRUCTIONS
•
STUDY PICT-O-GRAPH
•
SOLDER CAREFULLY
•
CHECK EACH STEP
•
USE SHORT LEADS
•
INSULATE

MOUNTING INSTRUCTIONS
(top of chassis)
USING PICT-O-GRAPH FIGURE NO. 4

STEP 1. The first step is to mount the trnasformer on the chassis using the hardware provided. You will notice that the transformer has five leads, two extending from one side, and three leads extending from the other. Mount the transformer in position as shown in FIG. 4, with the three leads of the transformer nearest to hole "A". Push these three leads through the hole designated as "A". Leave the other two leads dangling loosely.
STEP 2. Take the three-terminal tie post and mount in position as shown in FIG. 4. (Do not CONNECT or SOLDER any wires at this stage).

MOUNTING INSTRUCTIONS
(bottom of chassis)
USING PICT-O-GRAPH FIGURE NO. 1

STEP 1. Examine the bottom of the chassis very carefully. You will notice that the socket and soldering lug have already been mounted to the chassis for your convenience. Be certain that this soldering lug does not touch any of the pins on the socket. Notice the key notch in the center of the socket. The position of the key notch is very important for correct wiring of the socket.
STEP 2. Mount C-1 (electrolytic condenser) and the three-terminal tie post. Use the same screw and nut to hold the bracket of C-1 and the tie post together.
STEP 3. Take the phone jack and mount in position as shown. Tighten with the nut provided.
STEP 4. Mount the volume control, (control without switch) to the chassis as shown using the nut provided.
STEP 5. Mount the pitch control and switch (one unit) to the chassis as shown using the nut provided.

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* TRADE MARK

VALUABLE WIRING TIPS

MAKE CERTAIN THAT ALL THE CONNECTIONS CORRESPOND WITH THOSE OF THE EAGLE PICT-O-GRAPH, AND THAT ALL THE LEADS ARE AS SHORT AS POSSIBLE. BE SURE THAT THE SOLDERING CONNECTIONS ARE SMOOTH AND NOT LUMPY. USE ROSIN CORE SOLDER ONLY. NEVER USE ACID OR ACID CORE SOLDER FOR RADIO WORK. NO NOT USE TOO MUCH SOLDER OR IT MAY DRIP DOWN THE LUGS AND SHORT AGAINST THE CHASSIS. INSULATE THE WIRES WHEREVER NECESSARY WITH THE SPAGHETTI TUBING, ESPECIALLY THE WIRES THAT CROSS EACH OTHER OR RUN CLOSE TO THE CHASSIS.

IMPORTANT TERM EXPLANATIONS
Connect - Extend - Solder

CONNECT: WHEN OPERATIONS CALL FOR A CONNECTION OF A WIRE TO ANY DESIGNATED POINT, NO SOLDERING IS ADVISED AT THE TIME. SCRAPE THE INSULATION FROM THE WIRE AND CONNECT THE BARE END OF THE WIRE THROUGH THE DESIGNATED TERMINAL OR LUG OR TWIST FIRMLY AROUND IT. DO NOT SOLDER.

EXTEND: WHEN OPERATIONS CALL FOR EXTENDING A WIRE THROUGH ANY DESIGNATED POINT, AN EXTRA LONG PIECE OF BARE WIRE SHOULD BE USED TO MAKE POSSIBLE A SERIES OF TWO OR MORE CONTINOUS CONNECTIONS. INSULATE WHERE NECESSARY.

SOLDER: TO SOLDER TO ANY GIVEN TERMINAL OR LUG, THE OPERATION SHOUID INCLUDE THE SOLDERING OF THAT WIRE AND ALL OTHER WIRES PREVIOUSLY CONNECTED TO THE SAME TERMINAL OR LUG.

IN CONNECTING OR EXTENDING BE SURE TO TWIST THE WIRES FIRMLY AT THE POINTS INDICATED, TO PREVENT ANY OF THE WIRES FROM DROPPING OFF BEFORE YOU REACH THE SOLDERING STEPS THAT COMPLETE THE OPERATIONS.

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WIRING INSTRUCTIONS
(bottom of chassis)
USING PICT-O-GRAPH FIGURE NO. 2

You will notice that the pins of the socket are designated by numbers from 1 to 8. Now start your wiring operations using PICT-O-GRAPH FIG. NO. 2.

STEP 1. SOLDER a wire to pin #2 of the socket; SOLDER the other end to pin #8, EXTENDING the lead and SOLDERING to the solder lug of the socket.

STEP 2. CONNECT a wire to pin #6;CONNECT the other end to pin #7 of the socket.

STEP 3. SOLDER a wire to the bottom terminal of the pitch control; CONNECT the other end to pin #4 of the socket.

STEP 4. CONNECT a wire to pin #3 of the socket; CONNECT the other end to pin #5 of the socket.

STEP 5. CONNECT a wire to the middle terminal of the pitch control; CONNECT the other end to the top lug of the phone jack.

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STEP 6. CONNECT a four inch length of wire to the bottom lug of the phone jack; Push the other end through the hole in the chassis marked "C".
STEO 7. CONNECT a short piece of wire to the bottom lug of the phone jack; SOLDER the other end to the bottom terminal of the volume control.
STEP 8. Take a four inch length of wire; SOLDER one end to the top terminal of the volume control; Push the other end through the hole in the chassis marked "B".
STEP 9. Take one of the RED leads coming from C-1; CONNECT to pin #1 of the socket.
STEP 10. Take the other RED lead coming from C-1; SOLDER to the first terminal of the three-terminal tie post.
STEP 11. Take the BLACK lead coming from C-1; CONNECT to the middle terminal of the three-terminal tie post.
STEP 12. You will notice three leads coming from hole "A". One of these leads is the center tap of the transformer, previously mounted in Fig. No. 4, STEP 1. Trace these leads and find the center lead. Take this center lead and CONNECT to the first terminal of the three-terminal tie post.
STEP 13. Take one of the other leads coming from hole "A"; CONNEDT to the third terminal of the three-terminal tie post.
STEP 14. Take the remaining lead from hole "A" and SOLDER to pin #5 of the socket.
CHECK OPERATIONS: Check operations before proceeding to PICT-O-GRAPH FIGURE NO. 3.

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WIRING ONSTRUCTIONS
(bottom of chassis)
USING PICT-O-GRAPH FIGURE NO. 3

STEP 1. Take a five inch length of wire; SOLDER one end to the middle lug of the phone jack; Push the other end through the speaker opening.
STEP 2. SOLDER a wire to the right lug of the switch on the pitch control; SOLDER the other end to the middle terminal of the pitch control.
STEP 3. Take C-2 and C-3. Join them together by twisting the leads at one end. Slip a piece of spaghetti tubing over the twisted leads and SOLDER the end to the third terminal of the three-terminal tie post.
STEP 4. SOLDER the other end of C-3 to pin #4 of the socket; SOLDER the other end of C-2 to pin #3 of the socket.
STEP 5. Take C-4; SOLDER one end to pin #6 of the socket; CONNECT the other end to the middle terminal of the three-terminal tie post.
STEP 6. Take R-1; SOLDER one end to pin #1 of the socket; SOLDER the other end to the first terminal of the three-terminal tie post.
STEP 7. Take R-2; SOLDER one end to the top lug of the phone jack; SOLDER the other end to the bottom lug of the phone jack.
STEP 8. Take a piece of wire about 18 inches in length; SOLDER one end to the middle terminal of the volume control; Push the other end through the hole provided at the back of the chassis.
STEP 9. Take another piece of wire about 18 inches in length; SOLDER one end to the middle terminal of the three-terminal tie post; Push the other end through the hole provided at the back of the chassis.

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STEP 10. Take the line cord; Push the line cord through the hole provided at the back of the chassis. Tie a knot about three inches from the end of the line cord. This prevents the cord from slipping out. SOLDER one end to pin #7 of the socket; SOLDER the other end to the remaining lug of the switch on the pitch control.
CHECK OPERATIONS: Check operations before proceeding to PICT-O-GRAPH FIGURE NO. 4 & 5.

FINAL MOUNTING & WIRING INSTRUCTIONS
(top of chassis)
USING PICT-O-GRAPH FIGS. NO. 4 & 5

STEP 1. Mount the speaker. For correct speaker position refer to Fig. No. 5. Fasten the frame of the speaker to the chassis by means of two screws and nuts, using the two holes provided at the front of the chassis.
STEP 2. Take the wire coming from the speaker opening, (refer to Fig. 3 Step 1.) and SOLDER to the left lug of the speaker. (use Fig. 4)
STEP 3. Take a piece of wire about four inches in length; SOLDER one end to the right lug of the speaker; SOLDER the other end to the middle terminal of the three-terminal tie post. (Fig. 4)
STEP 4. Take the wire coming from the hole marked "B"; CONNECT to the bottom terminal of the three-terminal tie post. (Fig. 4)
STEP 5. Take the wire coming from the hole marked "C"; CONNECT to the top terminal of the three-terminal tie post. (Fig. 4)
STEP 6. Take one of the two wires coming from the top of the transformer; SOLDER one wire to the bottom terminal of the three-terminal tie post; SOLDER the other wire to the top terminal of the three-terminal tie post. (Fig. 4)

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OPERATING INSTRUCTIONS
USING PICT-O-GRAPH FIGS. NO. 4 & 5

Insert the tube into its socket. Attach the key to the two long leads protruding from the back of the chassis. Insert the line cord plug into the 110 volt AC or DC line. Turn on the switch of the pitch control. Allow a few seconds for the tube to warm up. Press the key. If your oscillator has been wired properly a high frequency note will be audible. Adjust the volume control to get maximum volume.
If no sound is produced through the speaker after pressing the key, you have made an error in your wiring. CHECK ALL PRECEEDING STEPS; FIND AND CORRECT ERROR.

OPERATION FOR PHONES

The oscillator may be used for operating one or more pairs of phones. By plugging the phone plug into the jack you automatically cut out the speaker. Do not under any condition connect an external ground to this instrument as it may blow out the house fuses and cause serious damage to the instrument itself.
PICT-O-GRAPH FIG. NO. 5 Section A shows how three pairs of phones may be connected in series by the use of double Fahnstock clips. As many as six pairs of phones may be used in the same series arrangement. The next six pairs of phones are also connected in series to each other, and in parallel to the first six phones, (see Section B). As many as 300 pairs of phones may be used in this series-parallel arrangement.

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EAGLE PICT-O-GRAPH STEP-BY-STEP INSTRUCTIONS

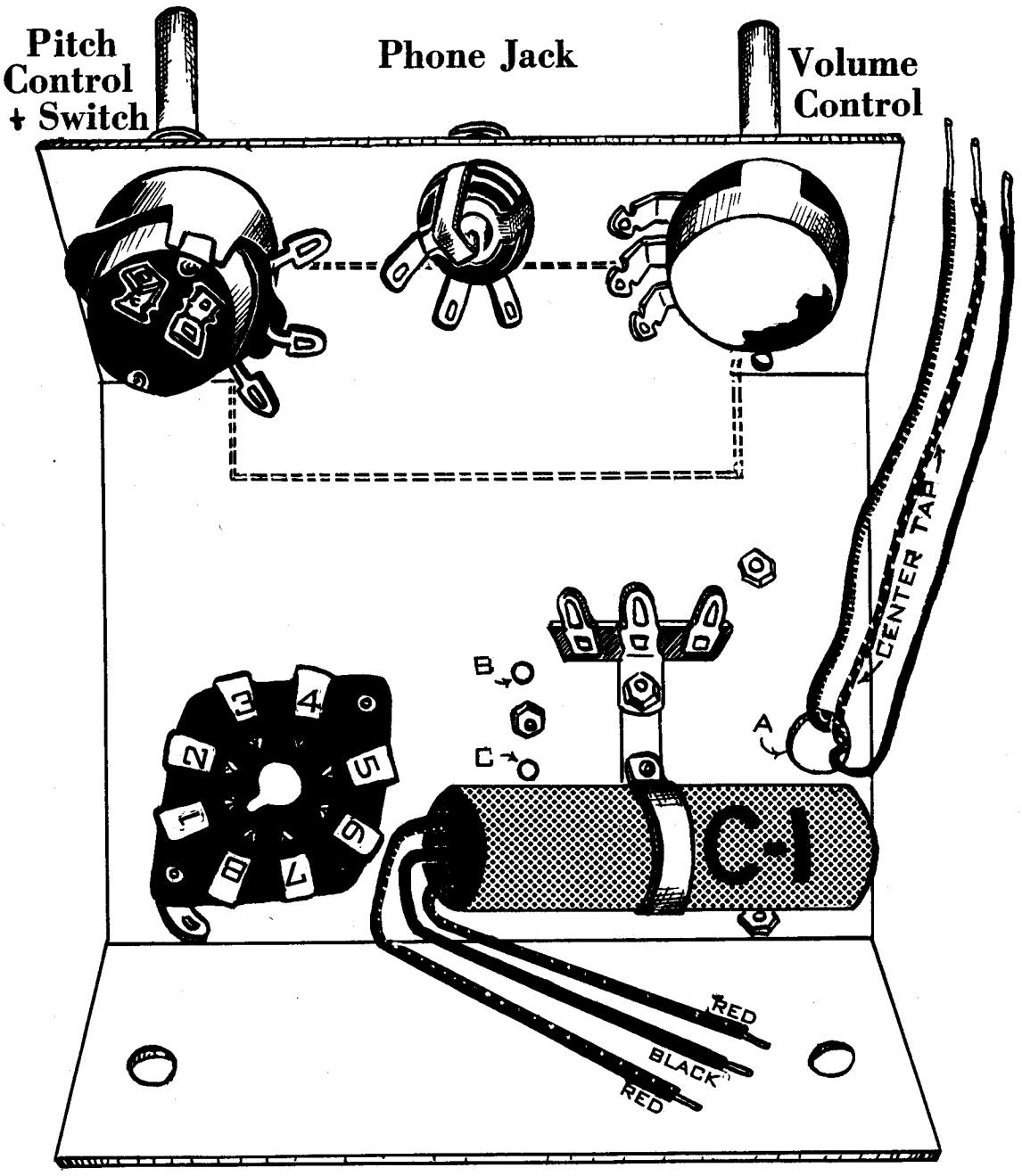

FIGURE 1

This is Fig. 1 of 5 PICT-O-GRAPH Figures.

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EAGLE PICT-O-GRAPH STEP-BY-STEP INSTRUCTIONS

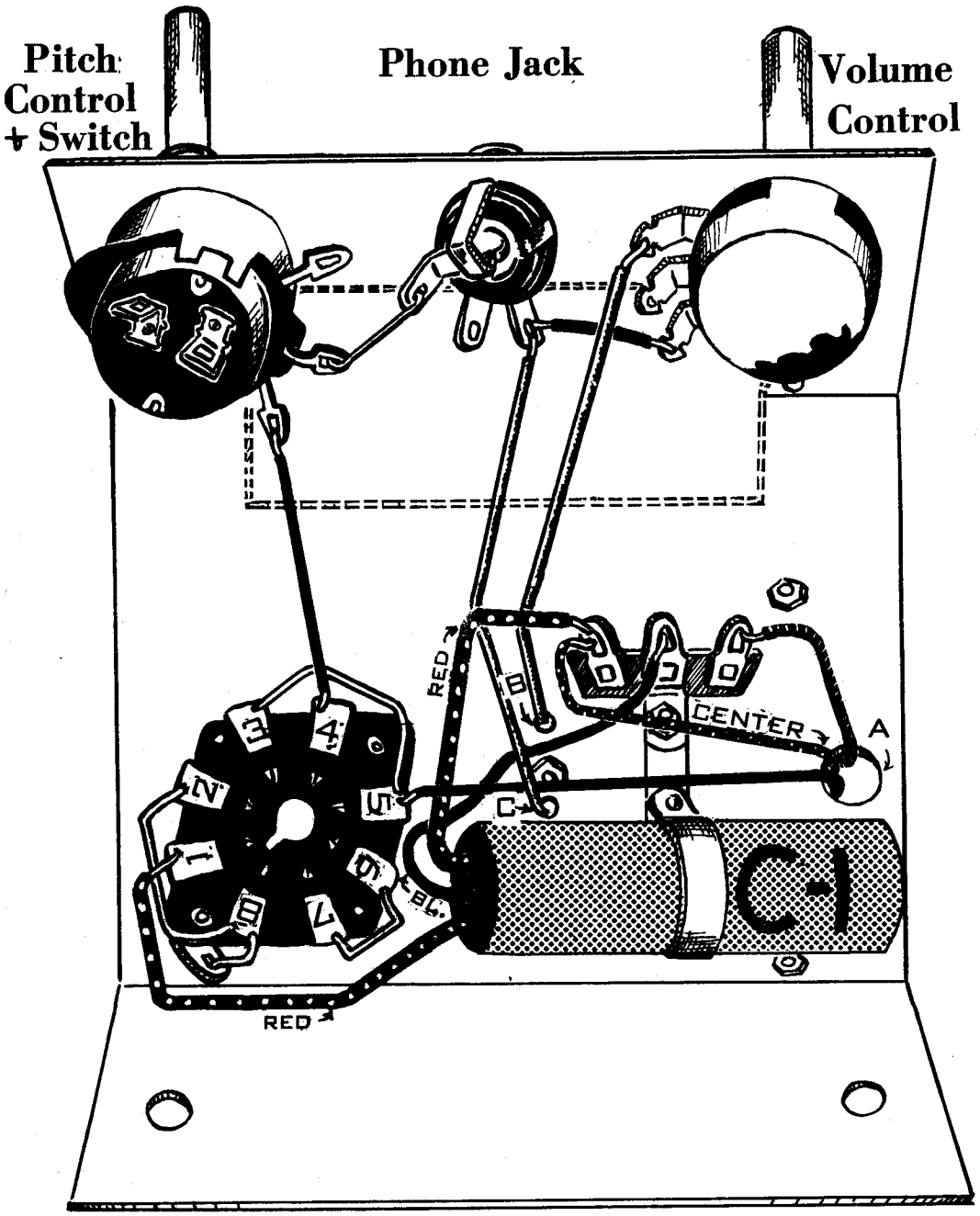

FIGURE 2

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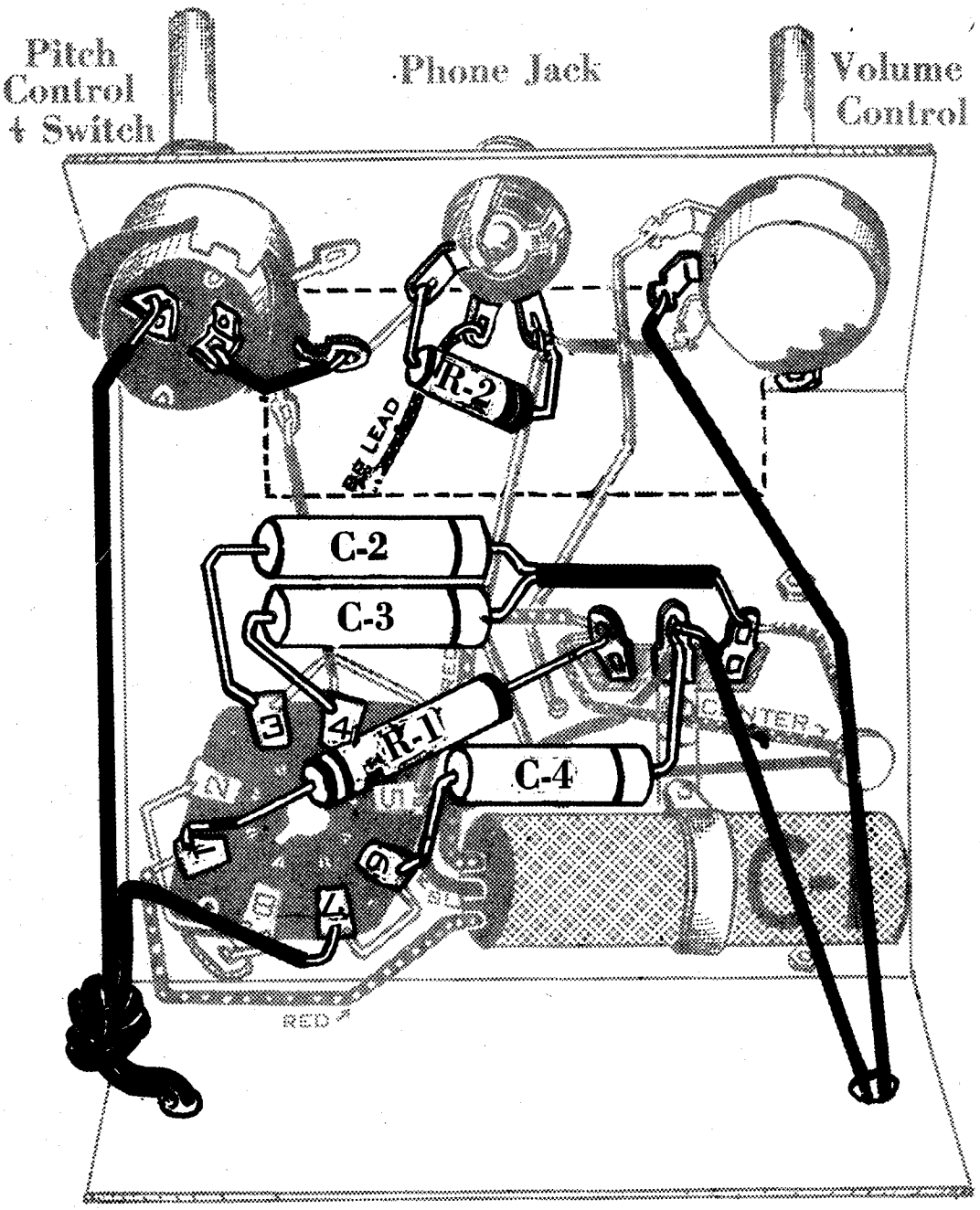
Pitch
Control
+ Switch
Phone Jack
Volume
Control
R-2
LEAD
C-2
C-3
R-1
C-4
RED

FIGURE 3

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EAGLE PICT-O-GRAPH STEP-BY-STEP INSTRUCTIONS

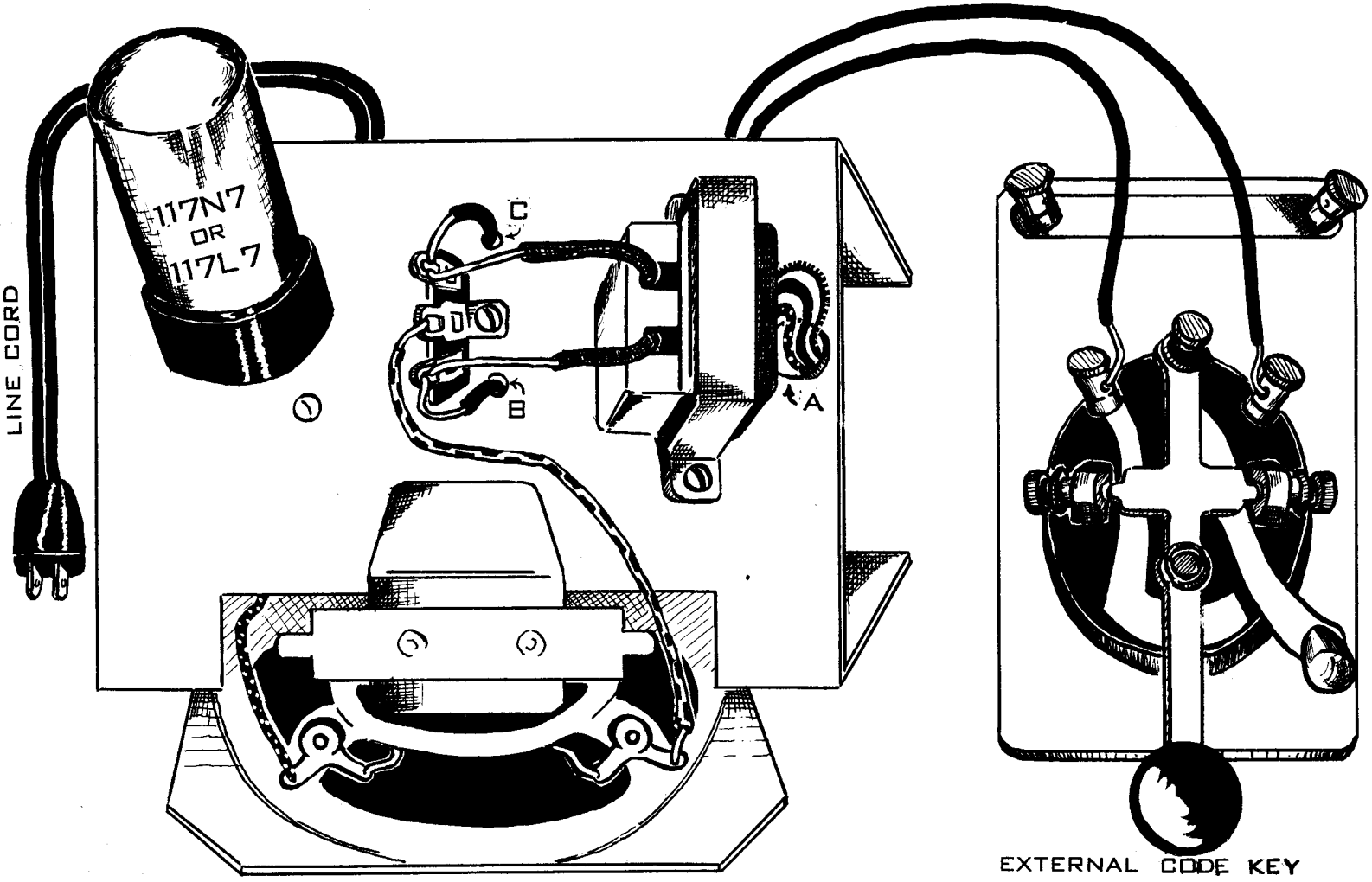

FIGURE 4

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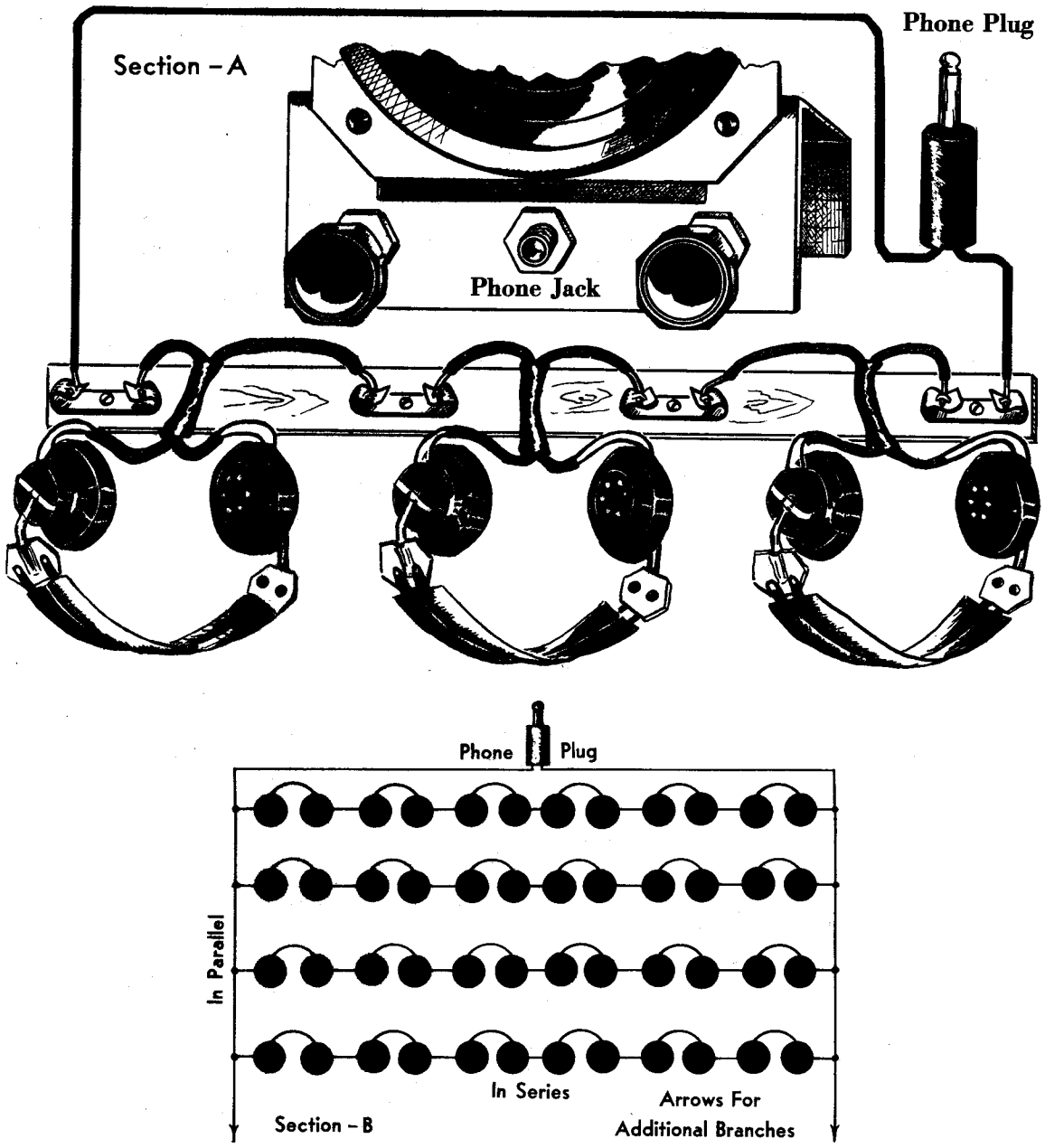

NOTE:— When PICT-O-GRAPH figures have light shaded portions, the BLACK areas are the wiring operations for those figures.

FIGURE 5

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Schematic Diagram KIT No. CP-12

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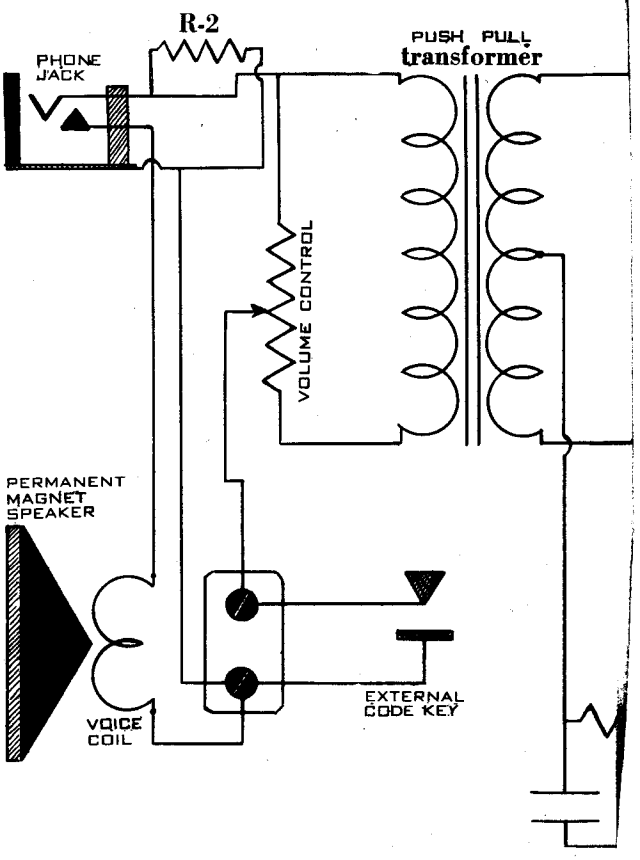

LIST OF PARTS

C-1 Filter Block
C-2 .01 Mfd. Cond.
C-3 .01 Mfd. Cond.
C-4 .01 Mfd. Cond.
R-1 1200 Ohm Res.
R-2 150 Ohm Res.

PM Speaker
PP transformer
Phone jack
Octal socket
Eagle punched chassis
Line cord.
50 Ohm Volume control
100K Ohm Pitch control with switch
Tie posts, hardware, etc.
117L7 or 117N7

This kit does not include wire or solder.

CAUTION
DO NOT USE EXTERNAL GROUND

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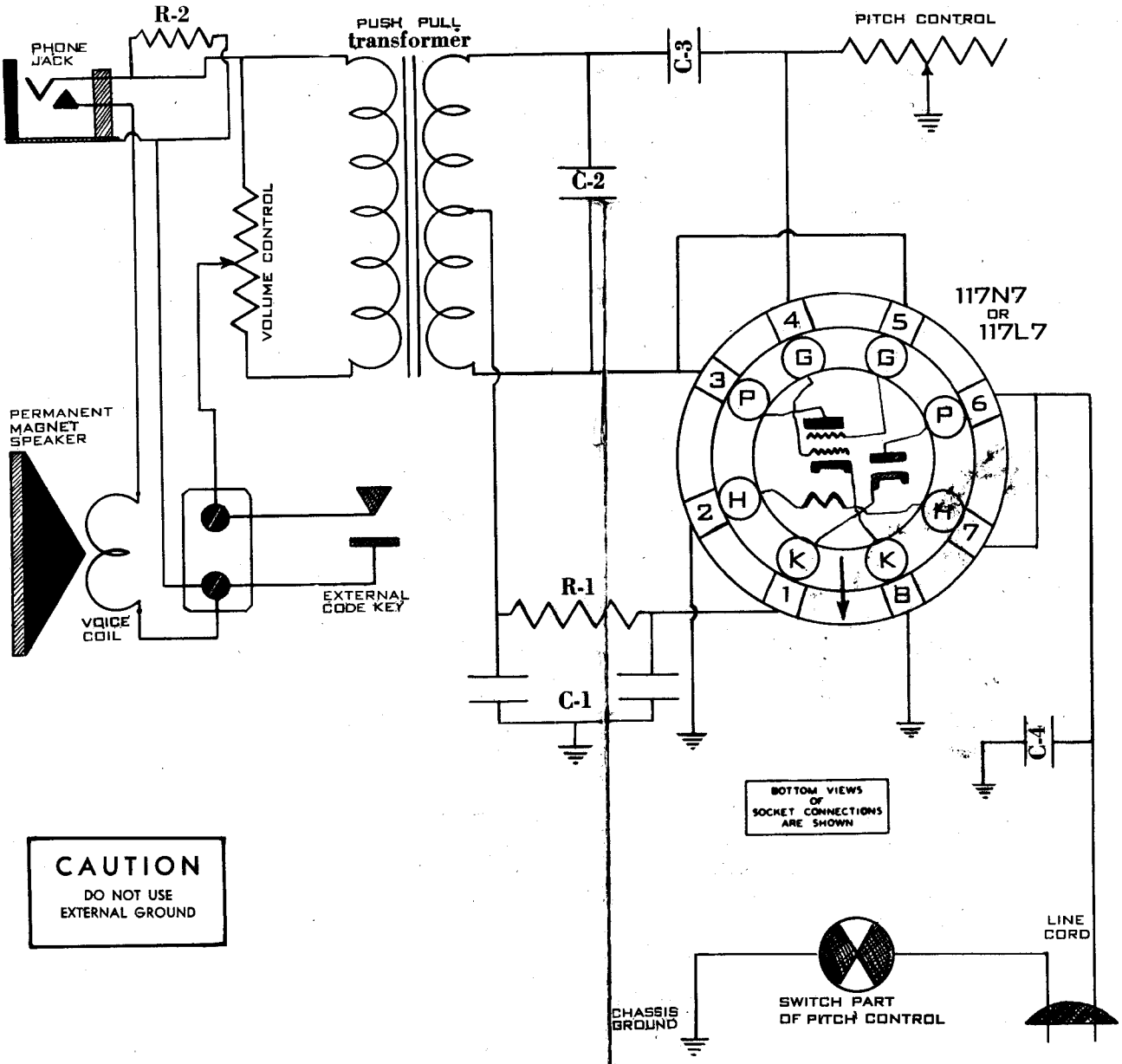
PICT-O-GRAPH

SCILLATOR

Trade Mark:



does not
or solder.

CAUTION
DO NOT USE
EXTERNAL GROUND

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KIT No. CP-12

VALUABLE INFORMATION

FREQUENTLY USED FORMULAS

The formulas given below are those which the serviceman may use daily in his work. Each of these should be memorized so that they become a practical part of his working knowledge of electricity.

Ohm's Law (Three Versions)

Volts (E) = Amperes (I) x Ohms (R)

$$R = \frac{E}{I} \qquad I = \frac{E}{R}$$

Power in Watts (Three Formulas)

$$W = I \times E \qquad W = \frac{E_2}{R} \qquad W = I_2 R$$

Condensers in Parallel C TOTAL $= C1 + C2$

Condensers in Series

$$C\ TOTAL = \frac{C1 \times C2}{C1 + C2} = \frac{1}{\frac{1}{C1} + \frac{1}{C2}}$$

Resistors in Parallel

$$R\ TOTAL = \frac{R1 \times R2}{R1 + R2} = \frac{1}{\frac{1}{R1} + \frac{1}{R2}}$$

Resistors in Series R TOTAL $= R1 + R2$

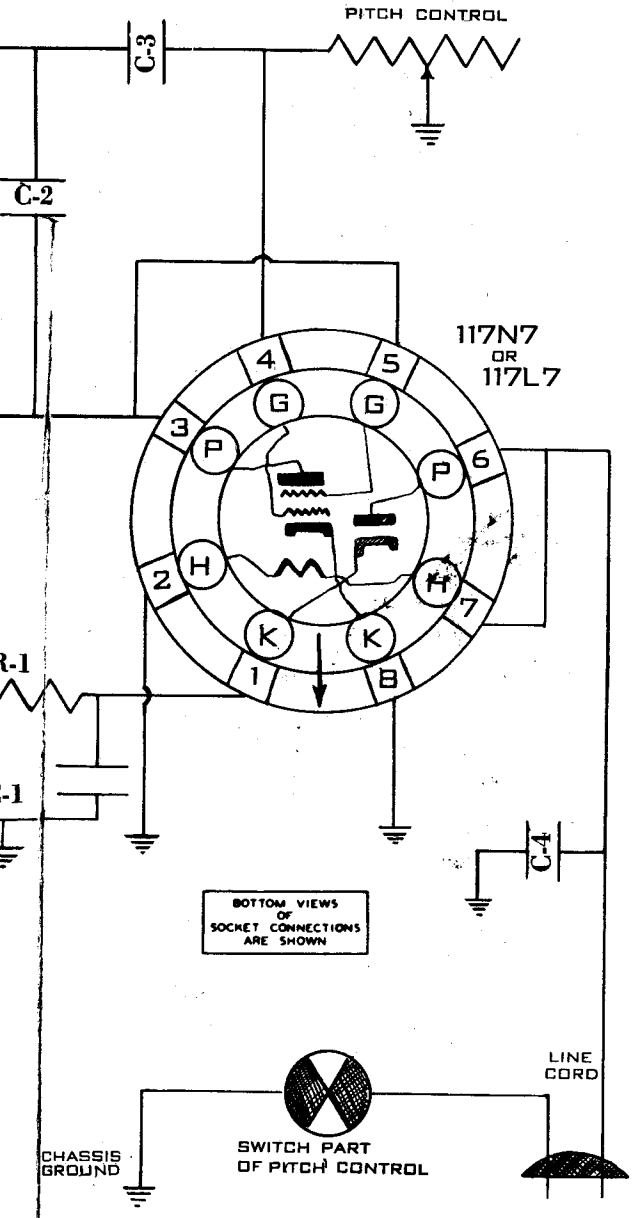
R. M. A. COLOR CODE

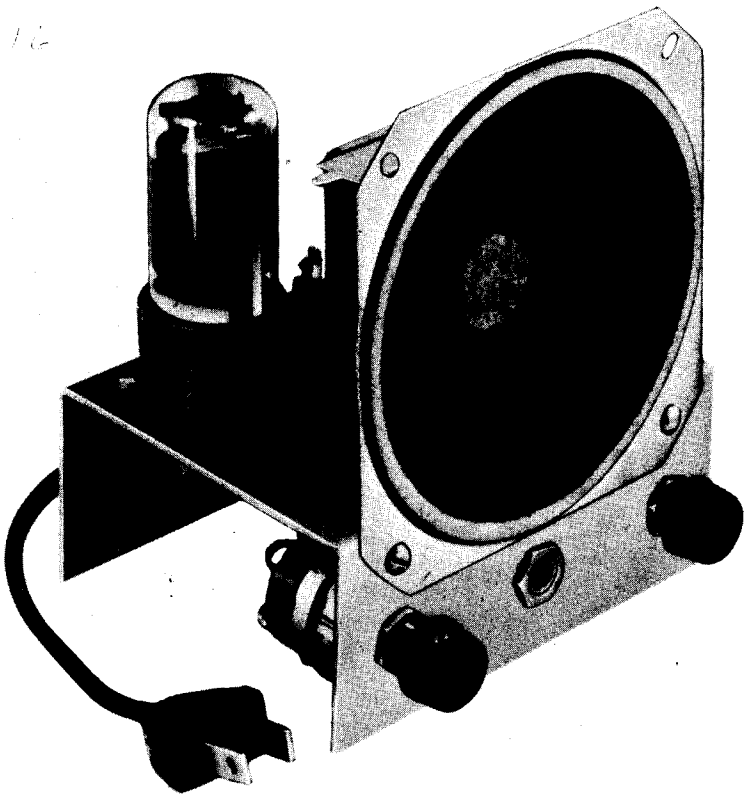
BODY		TIP	
Black	0	Black	0
Brown	1	Brown	1
Red	2	Red	2
Orange	3	Orange	3
Yellow	4	Yellow	4
Green	5	Green	5
Blue	6	Blue	6
Purple	7	Purple	7
Grey	8	Grey	8
White	9	White	9

DOT			
Brown	0	Yellow	0000
Red	00	Green	00000
Orange	000	Blue	000000

Read Resistors as follows:

A. Take Unit Figure of	B. Add Unit Figure of	C. Then Add Ciphers of
BODY	TIP	DOT
Color	Color	Color
RED	GREEN	ORANGE
2	5	000





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