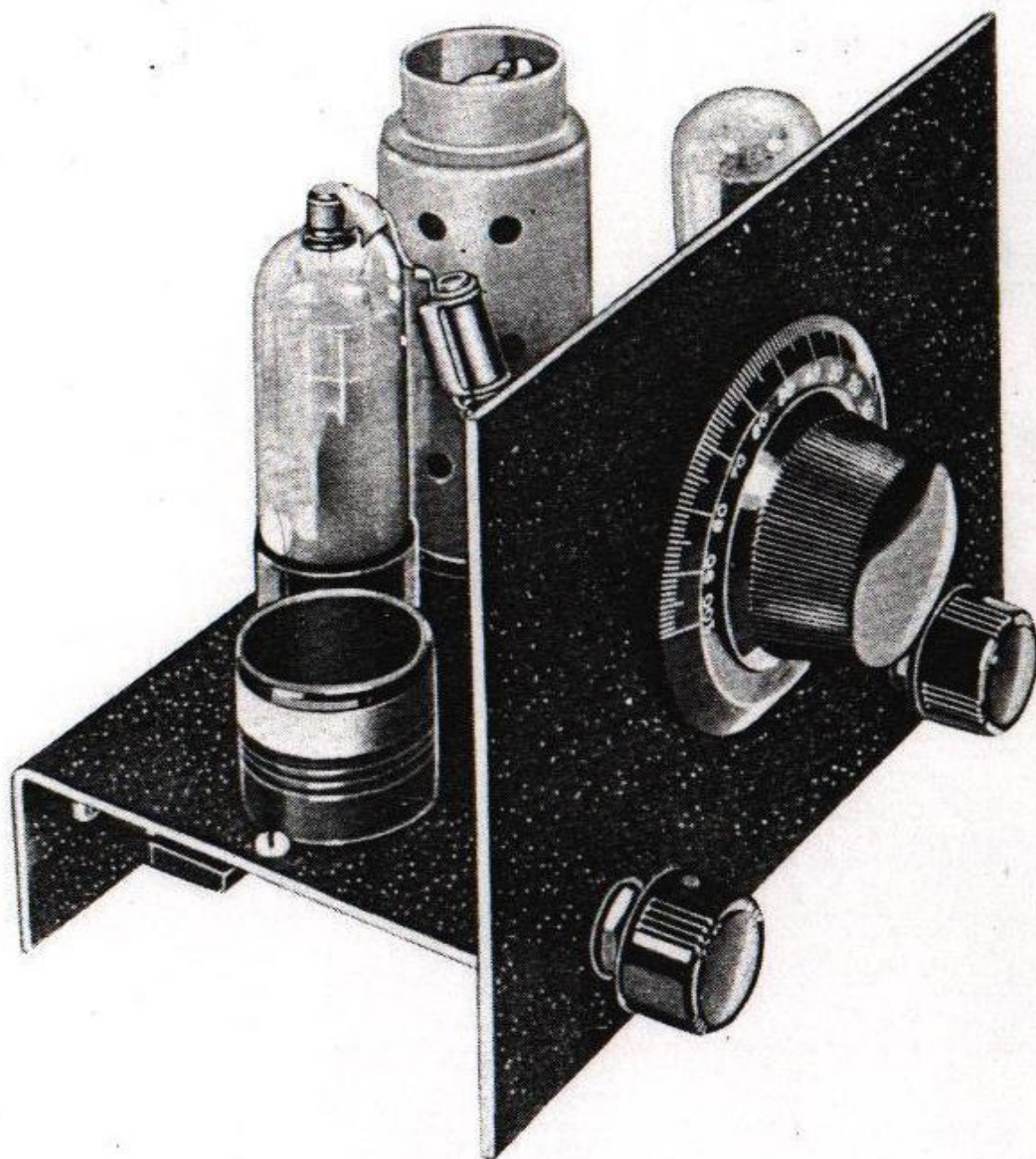


THE RADIO AMATEUR'S HANDBOOK

A COMPLETE
AND PRACTICAL GUIDE TO RADIO
CONSTRUCTION AND REPAIR *by*
A. FREDERICK COLLINS AUTHOR OF
WIRELESS TELEGRAPHY **EIGHTH EDITION**
REVISED BY E. L. BRAGDON RADIO
EDITOR OF THE NEW YORK SUN

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59. 1-3 Tube Meissner Midget Receiver

ASSEMBLING YOUR OWN RADIO RECEIVERS

CHAPTER 12

THE regenerative type of receiver is a favorite with amateurs. It is used chiefly because of its low cost and because it is easy to construct and put together.

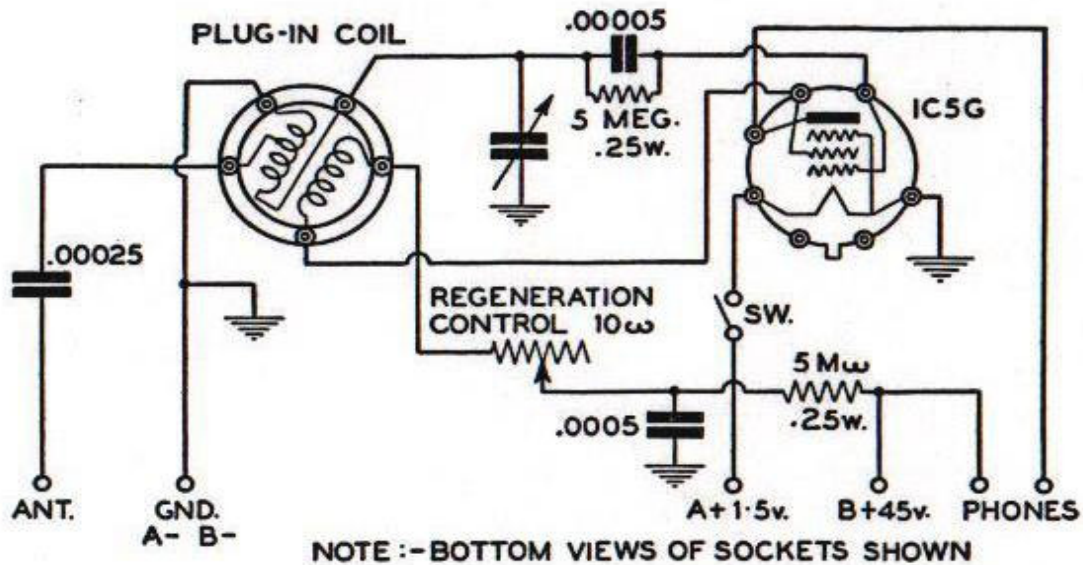
The Meissner 1-, 2-, and 3-tube regenerative receivers, described in the next few pages, are designed to supply the beginner with the simplest possible types of efficient vacuum-tube receivers. By means of four plug-in coils they will cover the following bands:

15 to 35 meters or 17630 to 8580 kilocycles
35 to 70 meters or 8580 to 4280 kilocycles
70 to 200 meters or 4280 to 1500 kilocycles
200 to 545 meters or 1500 to 545 kilocycles

All of the sets made from these kits operate on a single 1½ volt dry cell for *A* battery. The 1-tube set requires in addition only a single 45-volt *B* battery, while the 2- and 3-tube sets require two 45-volt *B* batteries and one 7½-volt *C* battery.

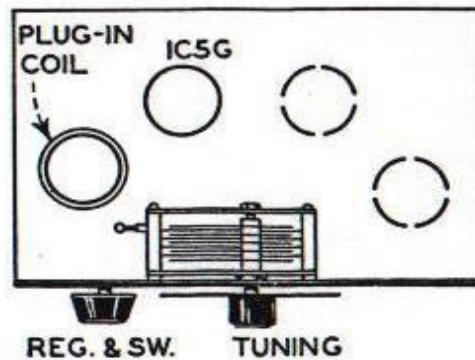
The one-tube receiver consists of a regenerative detector only. The two- and three-tube receivers include, in addition to the detector, respectively one and two stages of amplification. The designs have been arranged so that the two-tube receiver

can be made from the one-tube receiver by adding the amplifier tube and a few parts. Nothing is discarded. In the same fashion, the three-tube receiver can be built from the two-



57. Schematic circuit for Meissner 1-tube regenerative receiver

tube without discarding any parts. The chassis and the panels are identical for all receivers, it being necessary only to knock

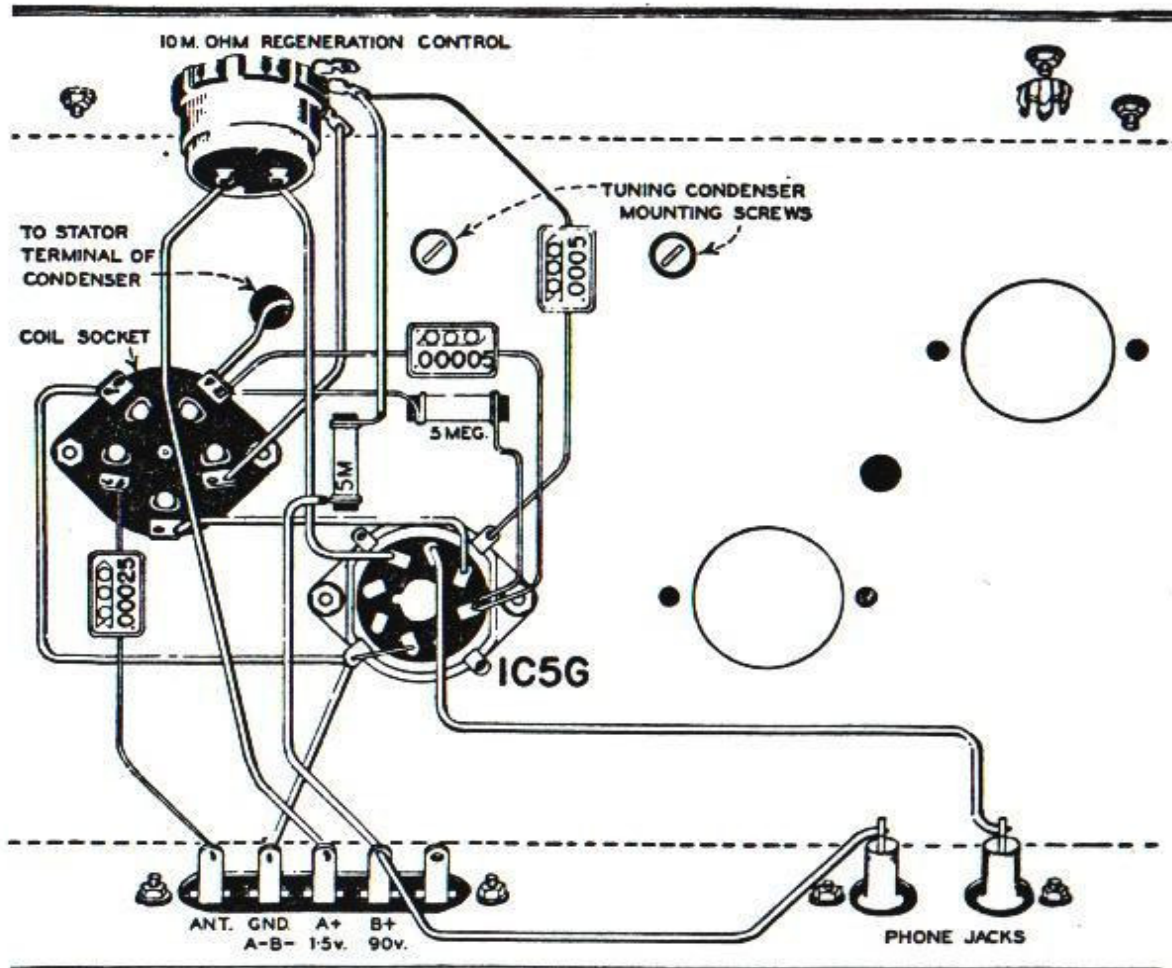


58. Top view of 1-tube regenerative receiver

out the special plugs in order to provide the necessary number of socket holes in the metal chassis.

All of the parts necessary for assembling a complete receiver, including the chassis and panel, are put up in kit form

and available in many radio stores. The kits do not include the tubes. These must be purchased separately. The detector tube is a 1C5G. The amplifiers are 1H5G's. One plug-in coil



60. Pictorial diagram showing arrangement of parts and wiring on underside of chassis of Meissner 1-tube regenerative receiver

covering the broadcast band (200 to 545 meters) comes with each kit. The other coils, if desired, must be purchased separately.

PARTS FOR 1-TUBE RECEIVER

- | | |
|--------------------------------|---|
| 1 Punched steel panel | 1 5-prong wafer socket |
| 1 Punched steel chassis | 1 Phone-tip connection plate |
| 1 360-mmfd. variable condenser | 1 5-terminal connection strip |
| 1 Broadcast band plug-in coil | 1 10,000-ohm regenerative control with switch |
| 1 Molded bakelite octal socket | |

1 .00005-mfd. mica condenser	2 No. 8-32 x 1/4" brass screws
1 .00025-mfd. mica condenser	2 No. 8 steel lockwashers
1 .0005-mfd. mica condenser	1 3/8" panel hole plug
1 5-megohm fixed resistor	1 1" black bakelite knob
1 5,000-ohm resistor	1 3" bakelite dial
11 No. 6-32 hexagon nuts	5 lengths colored hook-up wire
11 No. 6-32 x 1/4" steel screws	1 length insulating tubing
11 No. 6 steel lockwashers	1 length rosin-core solder

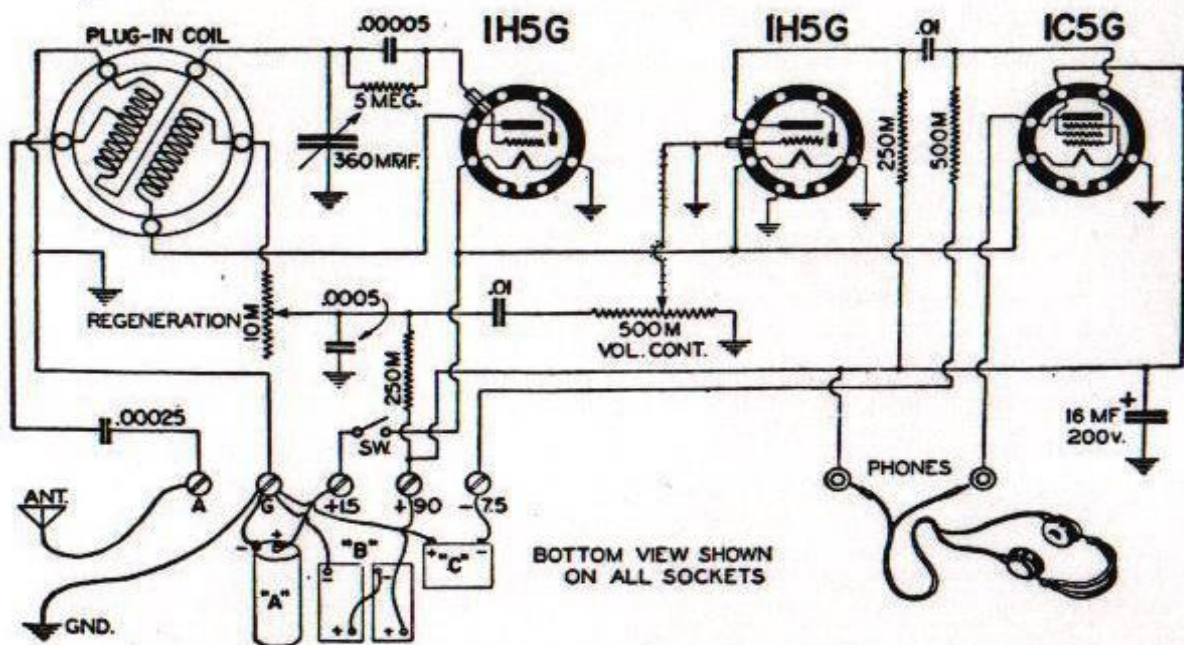
PARTS FOR 2-TUBE RECEIVER

1 Punched steel panel	1 5-megohm fixed resistor
1 Punched steel chassis	1 250,000-ohm fixed resistor
1 360-mfd. variable condenser	1 500,000-ohm fixed resistor
1 Broadcast band plug-in coil	13 No. 6-32 hexagon nuts
2 Molded bakelite octal sockets	13 No. 6-32 x 1/4" steel screws
1 5-prong wafer socket	13 No. 6 steel lockwashers
1 Phone-tip connection plate	2 No. 8-32 x 1/4" brass screws
1 5-terminal connection strip	2 No. 8 steel lockwashers
1 Tie-lug, single insulated terminal	1 Grid clip
1 10,000-ohm regeneration control with switch	1 3/8" panel hole plug
1 .00005-mfd. mica condenser	1 1" black bakelite knob
1 .00025-mfd. mica condenser	1 3" bakelite dial
1 .0005-mfd. mica condenser	5 lengths colored hook-up wire
1 .01-mfd., 200-volt paper condenser	1 length insulating tubing
	1 length rosin-core solder

PARTS FOR 3-TUBE RECEIVER

1 Punched steel panel	1 16-mfd., 150-volt electrolytic condenser
1 Punched steel chassis	1 5-megohm fixed resistor
1 360-mfd. variable condenser	2 250,000-ohm fixed resistors
1 Broadcast band plug-in coil	1 500,000-ohm fixed resistor
3 Molded bakelite octal sockets	14 No. 6-32 hexagon nuts
1 5-prong wafer socket	14 No. 6-32 x 1/4" steel screws
1 Phone-tip connection plate	14 No. 6 steel lockwashers
1 5-terminal connection strip	2 No. 8-32 x 1/4" brass screws
1 Tie-lug, single insulated terminal	2 No. 8 steel lockwashers
1 10,000-ohm regeneration control with switch	2 Grid clips
1 500,000-ohm volume control	2 1" black bakelite knobs
1 .00005-mfd. mica condenser	1 3" bakelite dial
1 .0005-mfd. mica condenser	1 2-piece tube shield
1 .00025-mfd. mica condenser	1 length shielded wire
2 .01-mfd., 200-volt paper condensers	5 lengths colored hook-up wire
	1 length insulating tubing

Do not attempt to wire a radio receiver unless you know how to solder. Wire a Meissner receiver by following the physical arrangement of the parts and leads shown in the pictorial diagram. Close adherence to the arrangement shown will bring freedom from trouble and give results that cannot be improved upon. The pictorial diagram shows a color for each wire. The corresponding colors of wire are furnished in



64. Schematic circuit for Meissner 3-tube regenerative receiver

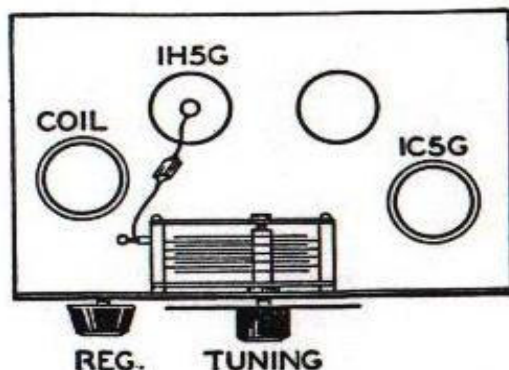
the kit in sufficient quantities to make the required connections. The wires marked "tubing" are covered with braided insulated sleeving or "spaghetti" tubing. This is indicated wherever there is chance for a short-circuit to occur between that lead and some other object. Sufficient tubing is furnished with each kit.

To avoid errors in wiring, it is a good plan, as each wire is put in place, to mark over the corresponding wire on the pictorial diagram with a colored pencil. The progress of the wire is then obvious at a quick glance and the unfinished por-

tion quickly identified. The order of wiring is of no importance. All parts are sufficiently accessible so that you may follow your own plan in that respect.

Four soldering lugs are provided on the metal mounting devices used to hold the sockets. It is important to bend down against the chassis all of these that are not required for wiring so that they will be out of the way of the wires to be attached to the socket lugs.

When all the connections have been securely made using rosin core solder and no paste or other chemical flux, care-



65. Top view of the 2-tube regenerative receiver

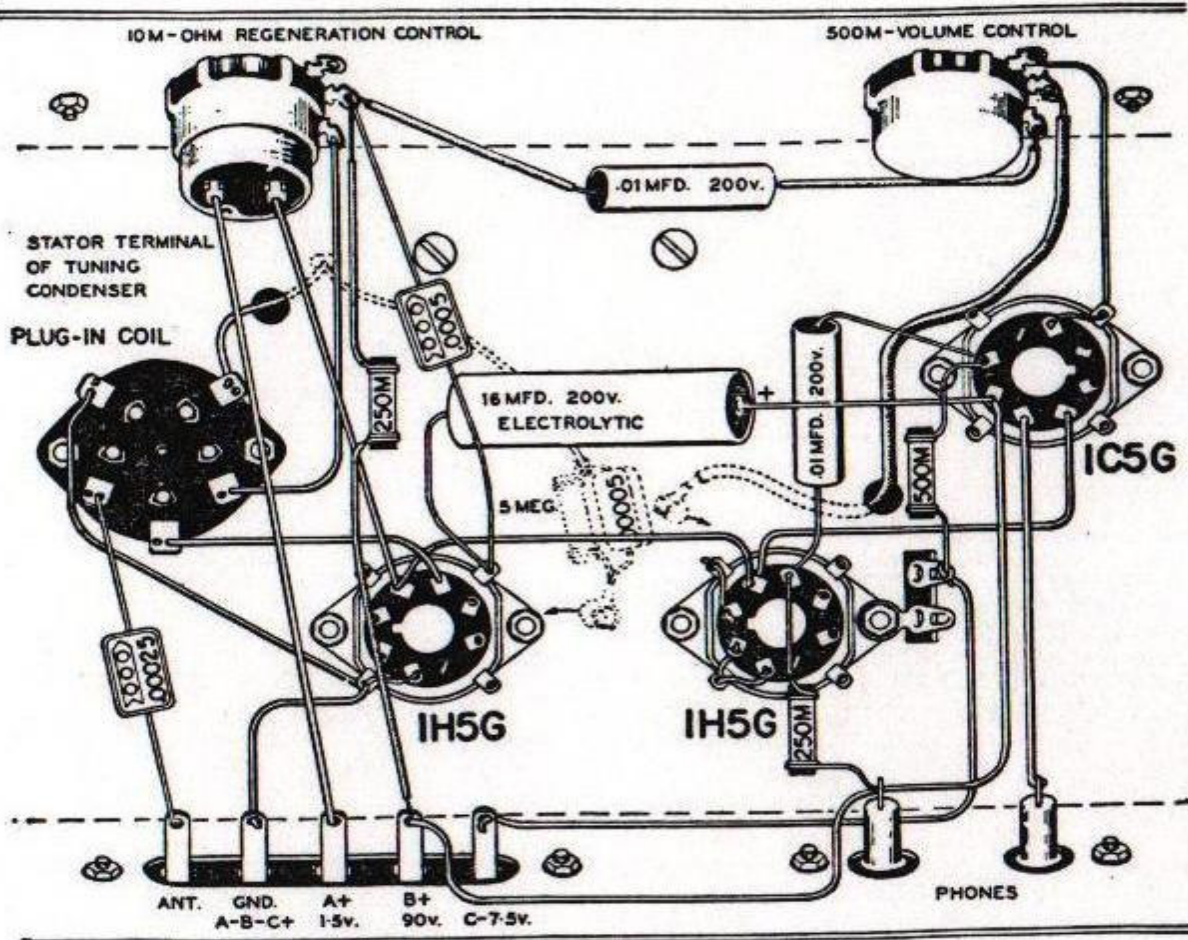
fully re-check the wiring for accuracy. If correct, the receiver is ready to connect and operate.

The average antenna for the Meissner 1-, 2-, and 3-tube regenerative receivers should be from 50–75 feet long and 20 feet or more above ground. It should be well away from trees, buildings, and power lines. If located relatively close to powerful broadcasting stations, the selectivity of the receiver can be improved by using a shorter antenna. On the other hand, if far away from the nearest powerful station, an antenna up to 200 feet long may be used with resultant increase in signal strength.

The ground connection should be made to a water pipe, to

a sheet of copper three square feet or more in area buried in the ground at a place that is usually damp, or to a piece of pipe driven down several feet into damp ground.

In order to put the receiver which you have just assembled into operation, connect a 1½ volt *A* battery to the terminal



66. Pictorial diagram showing arrangement of parts and wiring on underside of chassis of Meissner 3-tube regenerative receiver

connection strip as shown in the pictured connection diagram. Turn on the regeneration control. This automatically lights the tube filaments and a very dim red filament glow should be visible when looking down into the center of the tube if light is excluded from the tube by putting the hand around the bulb.

Attach the *B* battery leads next. They should be connected to the proper terminals on the receiver before being attached to the batteries. After the antenna and ground connections have been made and the headphones plugged into the pin jacks provided for the phone tips, check the wires attached to the terminals to see that they are firmly attached around the screws and that they cannot touch an adjacent terminal. When this has been done the *B* battery leads may be attached to the battery as shown in the picture.

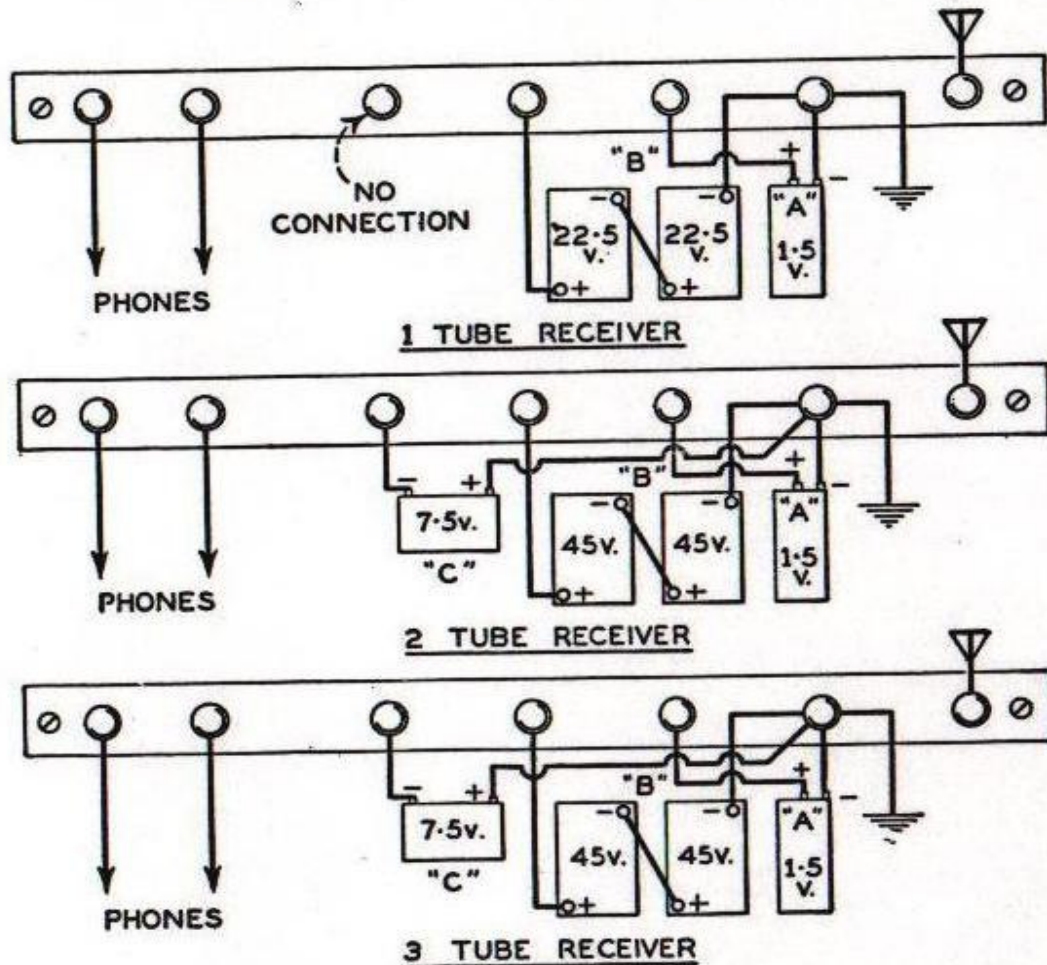
Plug into the left-hand socket a coil covering the wavelengths desired. The broadcasting stations operate between 200 and 545 meters. The amateur phone stations operate near 160, 80, 20, and 10 meters. The short-wave broadcasting stations have wavelengths of approximately 49, 31, 25, and 19 meters.

Turn the regeneration control clockwise to turn on the filaments and increase regeneration. Turn the receiver tuning dial slowly back and forth while advancing the regeneration control clockwise. When a whistle is heard in the phones, set the tuning dial so that the whistle is at its lowest pitch and reverse the rotation of the regeneration control until the whistle stops and the station is heard.

Do not permit the receiver to whistle longer than is necessary to tune in a station. When whistling, it is radiating, that is, acting as a miniature transmitter and interfering with good reception on any receiver in the neighborhood tuned to the same station.

The operation of the three receivers is identical except that in the case of the 3-tube receiver, a volume control has been provided in addition to the regeneration control. The volume control should be turned clockwise before beginning the operations described above.

When listening to local stations, the regeneration control is inadequate to control the volume of the signals of the 3-tube receiver. The best selectivity is obtained when the regeneration control is set just below the point of whistling and the volume control employed to regulate the signal volume.



67. Connections to the terminal strips on the back of the receiver

The amplification is so great in the 3-tube receiver that it is necessary to shield the middle tube and the lead connected to the grid cap of that tube. A two-piece shield and a shielded wire for the grid connection are provided in the kit. The connecting lug should be pressed on the proper pin in accordance with the view of the tube base shown in the diagram of con-

nections for the 3-tube set. The shield should then be pressed on the tube making firm contact with the connecting lug just assembled. If the connection is pressed over the wrong lug, considerable damage may be done to some part of the receiver.

The grid lead should have the shield cut back from the ends of the wire after the shielding has been soldered all around the wire for a length of $\frac{3}{16}$ " to $\frac{1}{4}$ " at the point to which the shield is to be stripped off. This holds the shielding in place and prevents fraying.

When using a loudspeaker in connection with the 3-tube receiver, a Celotex baffle or a cabinet for the speaker will greatly improve the quality of the sound output.

When through using the receiver, be sure to turn the regeneration control back so that the *A* battery is disconnected and the tube filaments are not lighted.