

Radiola 25

Super-Heterodyne



Radiolaville

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REG. U.S. PAT. OFF

Super-Heterodyne

*Radiola*ville



Instructions 86982
Edition F

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INTRODUCTION

RADIOLA 25 is a radio broadcast receiving instrument, utilizing the super-heterodyne principle, which provides unusual simplicity of operation, selectivity and sensitivity. The cabinet contains the operating mechanism and battery equipment, as well as a socket for the loop antenna which is plugged in through a hole in the top cover, making the receiver self-contained, with the exception of the Loudspeaker. The receiver is designed for reception over the broadcast frequency band, 550 to 1360 kilocycles (approximately 550 to 220 meters).

GENERAL

Radiola 25 Super-Heterodyne "A," "B" and "C" supply may be obtained as described in any one of the following combinations:

1. Complete dry battery operation, in which the "A," "B" and "C" supply is obtained from dry batteries. This is the form in which Radiola 25 is normally supplied.
2. "B" voltage may be obtained from either the RCA Duo-Rectron, Model AP-937, or Radiola Loudspeaker, Model 104, the "A" and "C" supply being obtained from the usual dry batteries.
 - (a) R.C.A. Duo-Rectron, Model AP-937 is operated from an alternating-current circuit rated at 105 to 120 volts, 40 to 60 cycles.
 - (b) Radiola Loudspeaker Model 104 may be operated from an alternating-current circuit rated at 105 to 120 volts, either 40 to 45 cycles or 50 to 60 cycles.
3. "A," "B" and "C" supply may be obtained from Radiola Loudspeaker Model 104 (making Radiola 25 entirely operated from alternating current), by changing Radiola 25 so as to employ the accessories furnished in the AC Package, Model UP-971.

This booklet describes the operation of Radiola 25 for **dry battery operation only**. Instructions describing the use of the other apparatus referred to will be found accompanying that apparatus.

The information herein is illustrated to show each step in the installation of Radiola 25. Read the instructions first, then follow the pictures, with accompanying descriptions, when making the installation.

EQUIPMENT REQUIRED

For Dry Battery Operation

The complete installation of the Radiola 25 for dry battery operation requires the following apparatus:

5 Radiotrons, Model UX-199 (furnished with the receiver). 1 Radiotron, Model UX-120 (furnished with the receiver). 1 Loudspeaker, such as Radiola 100, with Telephone Plug. 1 Set of "A," "B" and "C" batteries, as listed on page 5.

BATTERIES REQUIRED

The following batteries are required for complete dry battery operation.

NOTE.—The fact that the Radio Corporation of America does not list batteries of all manufacturers is not intended as a reflection on the products of any battery manufacturer not listed. Any battery having dimensions, ratings, and satisfactory terminal connections, similar to those of the batteries listed below, may be used.

(A)—Six standard dry cells, 1½ volts each, such as those listed below, for lighting the filaments. Approximate size, 2^{1/2} in. by 6^{1/2} in., such as:

6 Burgess No. 6 dry cells, or
6 Eveready Dry Cell Radio "A" batteries No. 7111,
or 6 Eveready Columbia Ignitor No. 6 dry cells, or 6
Ray-0-Vac No. 1211 dry cells or equivalent.

(B-1)—Two 22 ½ volt plate batteries, preferably of the VERTICAL TYPE (connected in series by the connections in the set), such as those listed below. Approximate size, 4 ¼ in. by 3 1/8 in. by 7 1/8 in., such as:

2 Burgess No. 2158 plate batteries,
or 2 Eveready No. 779 batteries, or
2 Ray-0-Vac No. 2153 plate
batteries, or equivalent.

Those of the horizontal type may be used if the vertical type is not available. Approximate size, 6 ¾ in. by 4^{1/8} in. by 3 1/8 in., such as:

2 Burgess No. 2156 plate batteries, or
2 Eveready No. 766 plate batteries (with cardboard container) or 2 Ray-0-Vac No. 2151 plate batteries, or equivalent.

(B-2)—Two 45-volt (extra large) plate batteries (connected in series by the connections in the set). Approximate size, 8 3/16 in. by 4 7/16 in. by 7 3/16 in., such as:

2 Burgess No. 10308 plate batteries, or 2
Eveready No. 486 or No. 770 plate batteries, or
2 Ray-0-Vac No. 9303 plate batteries, or
equivalent.

(C-1)—One 4 ½ volt negative grid bias or "C" battery. Approximate size, 4 in. by 1 7/16 in. by 3 1/16 in., such as:

1 Burgess No. 2370 negative grid bias battery,
or 1 Eveready No. 771 negative grid bias
battery, or 1 Ray-0-Vac No. 231-R negative
grid bias battery, or equivalent.

(C-2)—One 22 ½ - volt intermediate size plate battery, used as "C" battery. Approximate size, 4^{1/8} in. by 2 9/16 in. by 2 ¾ in., such as:

1 Burgess No. 5156BP plate battery,
or 1 Eveready No. 768 plate battery,
or 1 Ray-0-Vac No. 5151 BP plate
battery, or equivalent.

INSTALLATION

Location of the Receiver. Radiola 25 may be located in any position convenient to its user. It is well to remember, however, that large metal surfaces such as radiators, piping, wiring or metal lath within the walls of the building may absorb some of the energy of the radio waves. In modern apartment houses or hotels it is therefore often advisable to locate the receiver near a window. The best location can most easily be found by comparing the operation of Radiola 25 in different parts of the room.

Remove two rubber wedges by pulling on them and rotating drums downward simultaneously

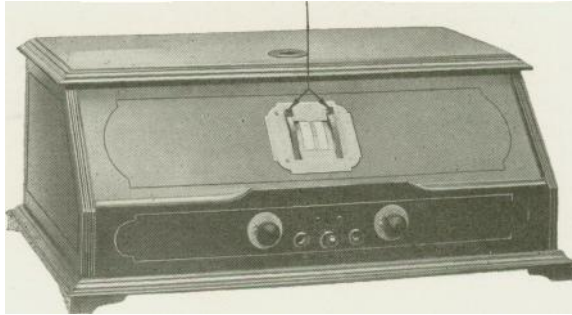


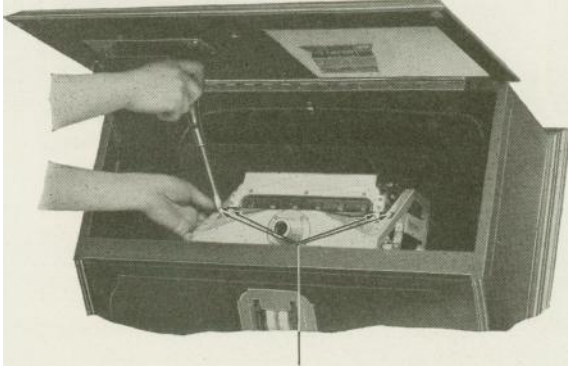
Fig. 1. Removal of Rubber Wedges

Preliminary Preparations. Remove the two rubber wedges which hold the Station Selectors from turning during shipment. Do this by pressing on the rubber wedge and turning the corresponding drum toward you until the wedge is released from under the metal plate. Keep these rubber wedges and replace them, if the receiver is shipped at a later date, to prevent motion of the Station Selectors.

Raise the lid of Radiola 25 to the vertical position, permitting the stay arm to hold it open. Remove the red shipping clamp which holds the tube socket unit during shipment, by taking out the four round head screws. When removing the two screws which hold the clamp to the frame of the set, keep the nuts from turning under the clamp and prevent their falling into the set. Inside the envelope containing the instruction book will be found two shorter round head screws. Put these into the two screw holes in the tube socket unit and screw them down securely. Keep the clamp, screws and

nuts and replace them if the receiver is shipped at a later time, to prevent the swaying of and possible damage to the spring-supported tube socket unit.

Installation of Batteries. When making connections to the batteries, do not permit the metal terminals on any battery connector to come into contact with the terminals of other battery connectors, with other battery terminals, or with the metal framework of the set, even for a short time. Such connections cause rapid reduction in the useful life of the batteries.



Remove Four Screws and the Red Shipping Clamp

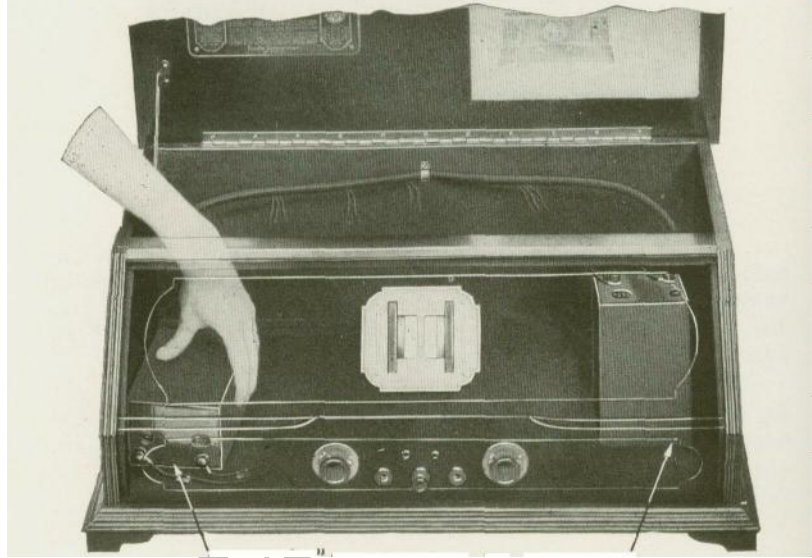
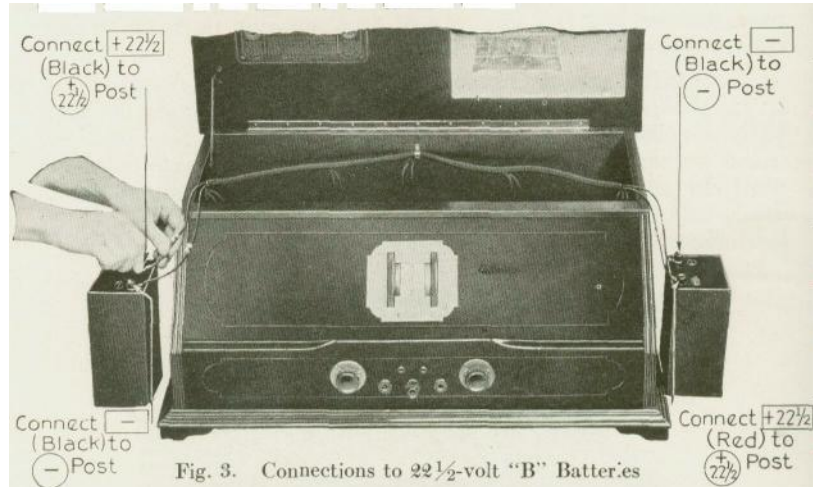
Fig. 2. Removal of Shipping Clamp

Do not insert the Radiotrons into their sockets until the battery installation has been completed. When making battery replacements, push in the filament switch K (Fig. 13), and remove all six Radiotrons from their sockets before proceeding to make the connections.

Make and keep all connections to the batteries as tight as possible. Loose connections may cause objectionable noises or perhaps render the receiver completely inoperative.

Radiola

The battery connections described herein are also shown on the "Instruction Card" fastened to the inside of the cabinet cover.



Place "B" Batteries in Cabinet and Push Them Toward Front

Fig. 4. Location of $22\frac{1}{2}$ -volt "B" Batteries

NOTE. - Throughout this booklet, where two or more wires are connected to a common terminal, the color identification of this group of wires is by means of the color of the particular wire on which the metal marker tag is clamped.

To INSTALL THE 22 ½ -VOLT "B" BATTERIES: Connect the batteries for Radiola 25 as follows: Set one of the 22 ½ -volt plate batteries (see paragraph **B-1**, pages 5 and 14) on the table at each end of the cabinet, and connect the four cable leads according to Fig. 3. Place the batteries in the cabinet (Fig. 4), setting them down upon the bottom next to the side, and then pushing them forward to the front of the cabinet. On the left-hand side, lay the battery down upon its flat side. The battery on the right-hand side of the cabinet may be placed in any desired position.

Connect (-) 4 ½ C
(Black and Green)
to (-) 4 ½ Post
Connect (-) 22 ½ C
(Black with Green
Tracer) to (-) Post

Connect Red
Lead from (+) 22 ½
Post and (+) C (Green)
Lead to (+) Post

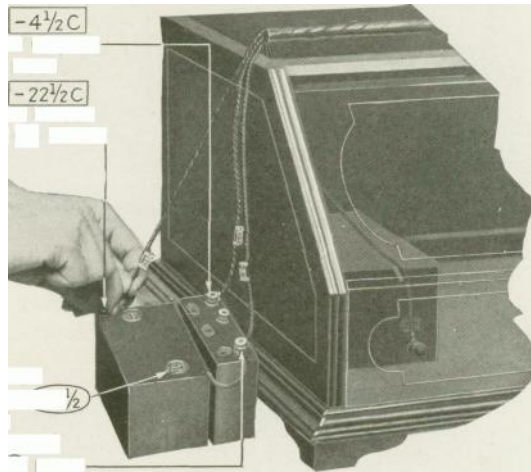
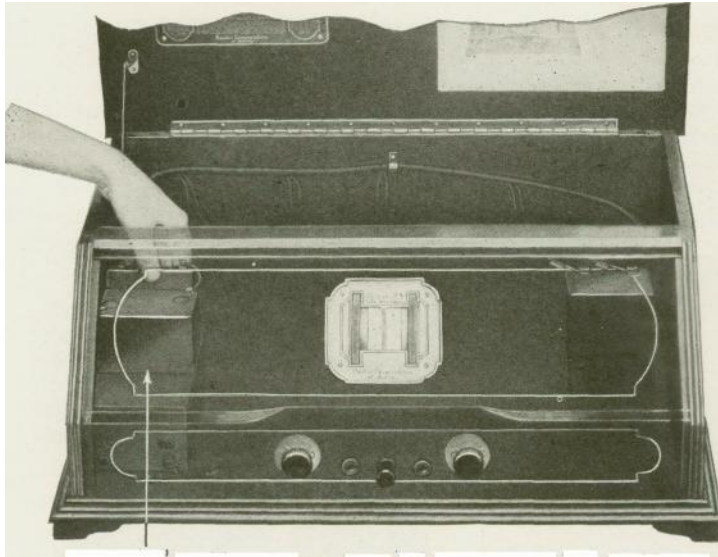


Fig. 5. Connections to "C" Batteries

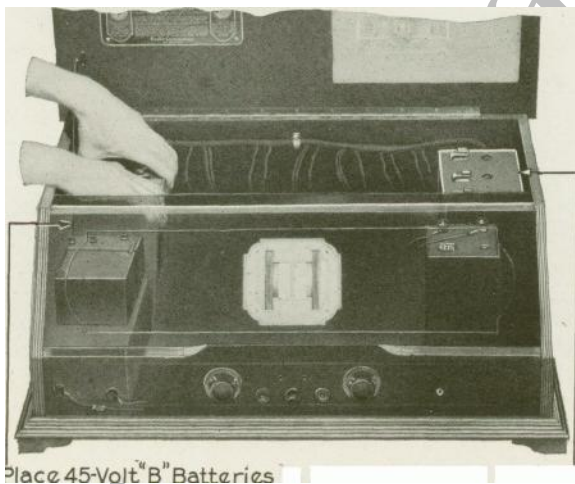
To INSTALL THE "C" BATTERIES: Place the two grid bias ("C") batteries (see paragraphs **C-1** and **C-2**, pages 5 and 14) on the table to the left of the receiver, and connect the pigtail of the 22 ½ - volt "C" battery and three cable leads as described in Fig. 5. Now place the two batteries on top of the "B" battery already in place on the left-hand side of the cabinet (Fig. 6) and push them forward to the front of the cabinet.



Place "C" Batteries on Top of Left-hand "B" Battery

Fig. 6. Location of "C" Batteries

To INSTALL THE 45-volt "B" BATTERIES: Place the two 45-volt plate batteries (see paragraph **B-2**, pages 5 and 14) in the two rear corners of the cabinet, and connect the four cable leads as described in Fig. 8.



Place 45-Volt "B" Batteries

Place 45-Volt "B" Batteries in Rear Corners of Cabinet

Fig. 7. Location of 45-volt "B" Batteries

Connect (-) Black to
(-) Post
Connect (+) 45 Two Maroon
and Red, One Black to
(+) 45 Post

Connect (+) 45 Maroon to
(+) 45 Post
Connect (-) One Yellow
with Red Tracer. One
Black with Red Tracer to
(-) Post

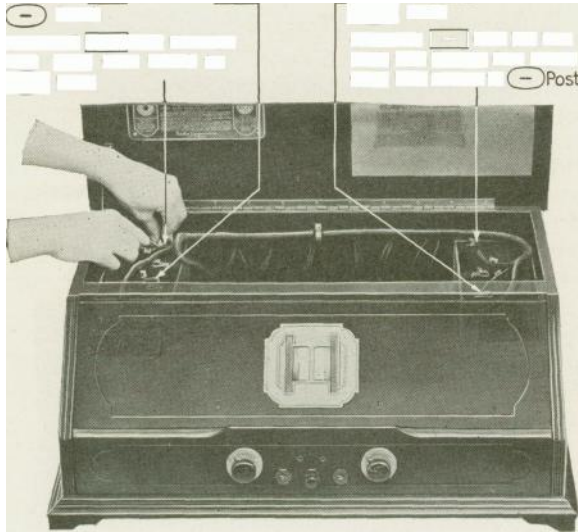
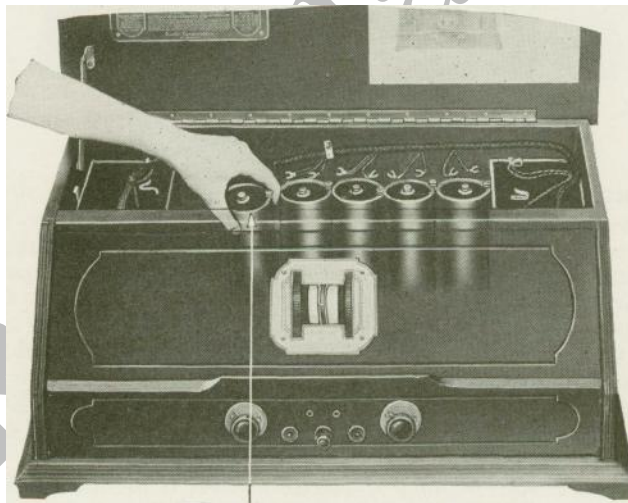


Fig. 8. Connections to 45-volt "B" Batteries

To INSTALL THE "A" BATTERIES: Place the six "A" batteries (see paragraph A, pages 5 and 14) along the back of the cabinet (Fig. 9) behind the spacing rail and between the two 45-volt "B" batteries just put in place.

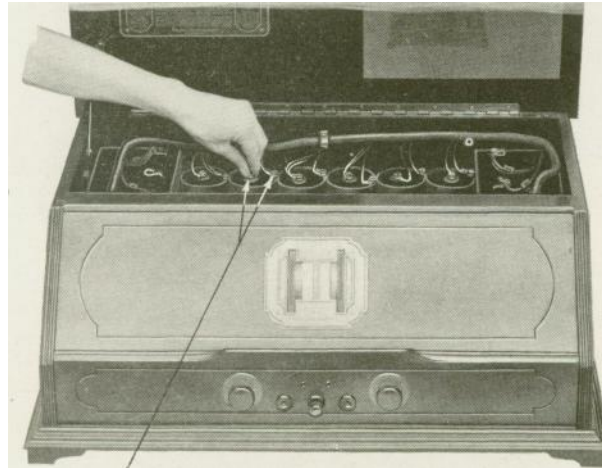


Place Six "A" Batteries in Rear of Cabinet

Fig. 9. Location of "A" Batteries

There will be found six pairs of leads coming out of the cable just above these batteries, one of each pair being a short lead, the other a long lead. Connect each of the short leads (+A) to the central (positive) binding posts of their respective batteries. Connect each of the long leads (—A) to the outside (negative) binding posts of their respective batteries (Fig. 10).

After all the above connections have been made, it may be well to examine them and to note that they all agree with the connections illustrated in Fig. 13 and those shown on the "Instruction Card" fastened to the cabinet cover.



Connect Six Short Leads to Center Posts and Six Long Leads to Outside Posts

Fig. 10. Connections to "A" Batteries

Insertion of Radiotrons. All the Radiotrons should be handled with care. Before installing the Radiotrons, turn the "BATTERY SETTING" pointer F, Fig. 13, to "OFF," and push in the filament switch K in the center of the vertical control panel.

Unpack the five Radiotrons, Model UX-199, from their cartons. It will be noted that the Radiotrons have two small and two large diameter pins. The Radiotrons should be so faced that the two small sized pins enter the holes on the forward side of the sockets. Place the Radiotrons UX-199 in sockets 1 to 5, starting from the right-hand side, when facing the front of the set.

Unpack Radiotron UX-120 and insert it in tube socket 6 (the one on the extreme left of the tube socket unit). It is important to locate Radiotron UX-120 in socket 6 only.



Insert Five Radiotrons UX-199 in Sockets 1 to 5

Fig.11. Insertion of Radiotrons UX-199

Turn the "VOLUME CONTROL" pointer P to "LOUD". Pull out the filament switch K. Then turn the "BATTERY SETTING" pointer F slowly to the right to 3.5. The Radiotrons should be lighted dimly, the glow usually being just visible near the base of each tube. Note that the Radiotron in socket 3 will not be lighted as brightly as the others, unless



Insert Radiotron UX-120 in Socket 6 Only

Fig. 12. Insertion of Radiotron UX-120

the "VOLUME CONTROL" pointer P is turned to "LOUD". If the Radiotrons light as just described turn the "BATTERY SETTING" pointer F to "OFF", push in the filament switch K, and close the lid of Radiola 25.

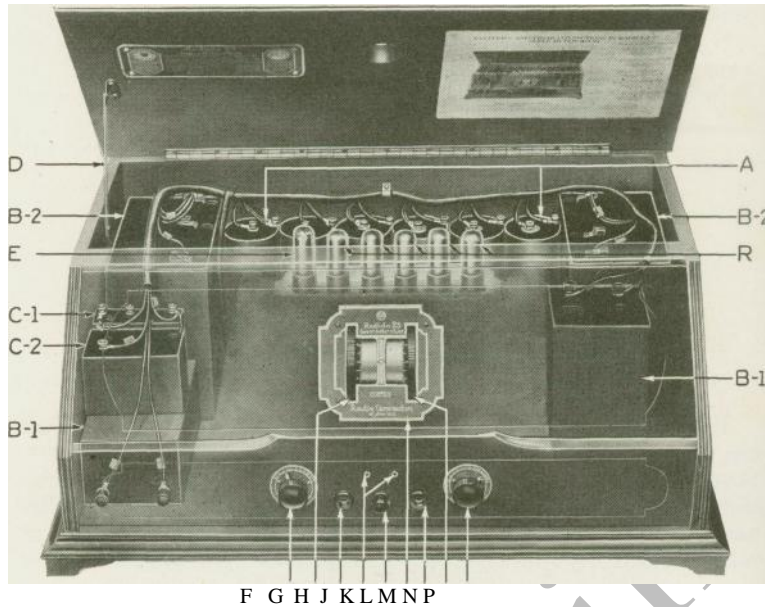


Fig.13. Radiola 25 with Batteries and Radiotrons Installed

- A Six "A" Batteries (see page 5)
- B-1 Two 22 ½ - volt "B" Batteries (see page 5)
- B-2 Two 45 - volt "B" Batteries (see page 5)
- C-1 One 4 ½ - volt Bias Battery (see page 5)
- C-2 One 22 ½ - volt "B" Battery used as Bias (see page 5)
- D Stay Arm for Lid
- E One Radiotron UX-120 in Socket 6 only
- F "BATTERY SETTING" Pointer
- G Left-hand Station Selector Drum
- H First Stage Telephone Jack
- J Two Filament Voltmeter Jacks
- K Filament Switch
- L Station Selector Drum Control
- M Second Stage Telephone Jack
- N Right-hand Station Selector Drum
- P "VOLUME CONTROL" Pointer
- R Five Radiotrons UX-199 in Sockets 1 to 5

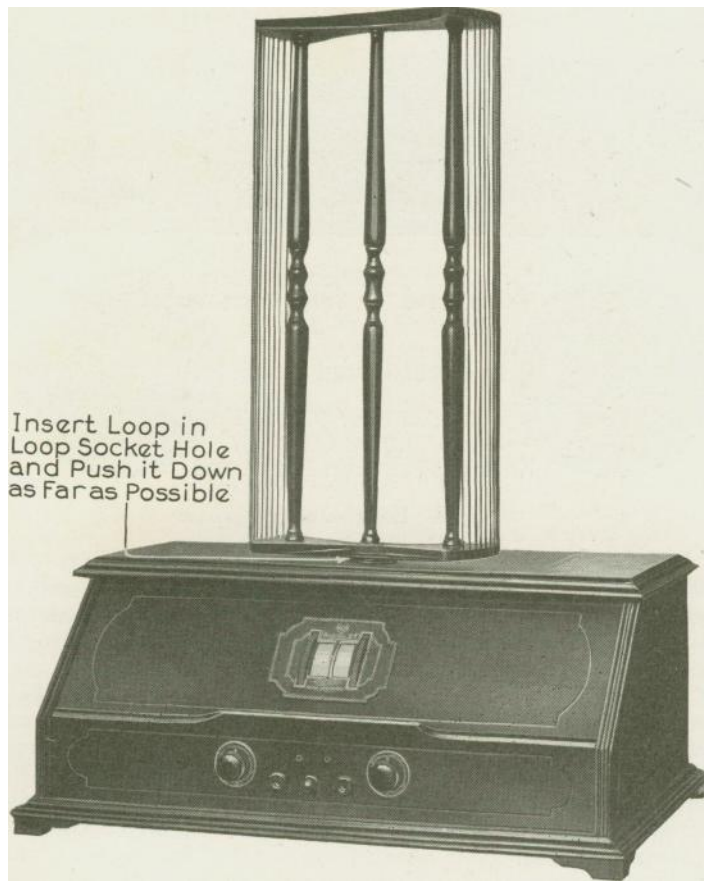


Fig. 14, Insertion of Loop

Insertion of Loop. Unpack the loop for Radiola 25, which comes in a separate container. Handle the loop with care, preferably holding it by the center spindle to avoid damage to or stretching of the wires. Push the projecting center spindle of the loop through the loop socket hole (Fig. 14) in the top of the cabinet, rotate it slightly until the contacts line up with the slots in the socket, and push it down as far as it will go.

OPERATION

Clips for Measuring Filament Voltage

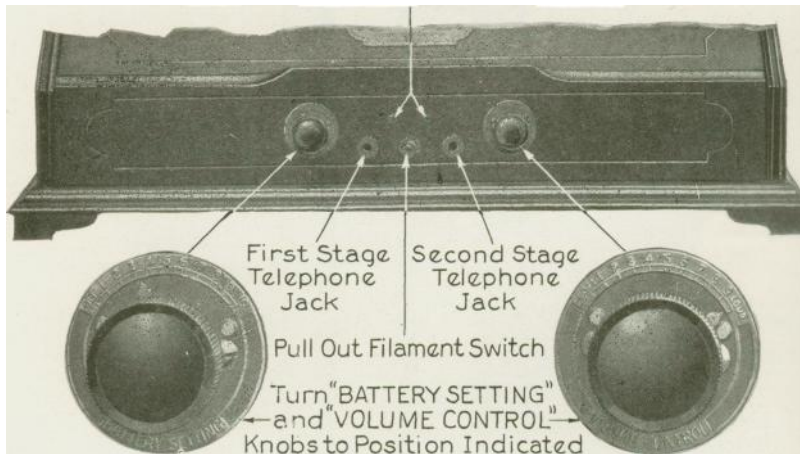


Fig. 15. Location of Controls

Loudspeaker. The phone plug of a Loudspeaker, such as Radiola Loudspeaker Model 100 or Radiola Loudspeaker Model 104, should be inserted in the second stage telephone jack (Fig. 15). The first stage telephone jack may also be used for Loudspeaker operation at reduced volume.

Filaments. Pull out the Filament Switch (Fig. 15). Turn the "VOLUME CONTROL" to "LOUD." Turn the "BATTERY SETTING" control to a position where good results are obtained. With new "A" batteries, this point comes at about 3.5 on the scale. The life of the Radiotrons will be considerably lengthened by setting the pointer of this control as far to the left as practicable and then advancing slightly to improve the quality of reproduction. This control may be advanced from time to time as the "A" batteries grow weaker.

Voltmeter. In order to obtain the maximum useful life of Radiotrons and batteries, it is recommended that a high-grade high-resistance voltmeter be used to adjust the filament terminal voltage to a value not exceeding 3.3 volts. This voltage may be measured by inserting the leads of the voltmeter, preferably equipped with phone tips, into the filament voltmeter jacks J (Fig. 13). With the "VOLUME CONTROL" pointer at "LOUD" and "BATTERY SETTING" pointer at "OFF", insert the voltmeter leads not more than one inch into the filament voltmeter jacks, the lead from the positive ("+") terminal entering the right-hand jack. Then advance the "BATTERY SETTING" pointer slowly until the voltmeter registers proper value, which should be as low as will give good

results and should never be over 3.3 volts. When the "VOLUME CONTROL" is used to reduce the volume, the filament voltage will rise slightly. If the filaments are then being operated with a voltage near the upper limit (3.3 volts), it is advisable to turn the "BATTERY SETTING" pointer slightly toward the left to compensate for this rise in voltage.

Tuning. The tuning of Radiola 25 involves only the manipulation of the two drums G and N on the Station Selector Control L (Fig. 13), a simple operation after the principles described below become thoroughly understood.

It will be noticed that on each of the drums there is marked a scale for reading the positions of the Station Selectors. An arrow on the center member indicates the setting. The settings of the *two* Station Selectors should be very closely the same; i.e., if one is set at 60, the other should be at or near 60.

When moving the drums it will be seen that both of them will turn if either is moved. By holding either of the drums stationary, however, the other may be rotated independently.

When tuning for stations, the settings of which are not known, proceed as follows: Set the left-hand drum G at about 10, and hold it to prevent its turning. Rotate the right-hand drum N slowly back and forth, around position 10, say from 5 to 15. If no signals are heard, set the left-hand drum G at about 12, holding it to prevent turning. Then rotate the right-hand drum N slowly back and forth around 12, say from 7 to 17. If again no signals are heard, set and hold the left-hand drum at about 14, and move the right-hand drum slowly back and forth from about 9 to 19. **If** still no signals, repeat this process, increasing the setting of the left-hand drum in small steps until the whole scale has been covered.

The two station selectors must bear a particular relation to each other in order to "tune in" broadcasting stations. After the first few trials, it will be noted that when the two drums are properly adjusted with respect to each other, a slight breathing sound will be heard, even though no station is tuned in.

After hearing a signal, carefully adjust both drums for the clearest reproduction. Once a station has been tuned in, do not disturb the relation between the two drums. After this relation has once been determined, the settings for the two drums should have approximately the same relation for other stations. It will be necessary only to rotate the two drums together by turning either one of them. After other

stations have been located, however, it may be possible to increase the volume and to better the tuning slightly by a careful readjustment of the drums until the best reception is obtained.

If no signals are heard while tuning, various positions of the loop should be tried. For every station there is a position of the loop which will give best reception.

Control of Volume. As Radiola 25 is a very sensitive receiver, it is usually necessary to use only a portion of its full power. The loudspeaker output may be reduced by using one or more of the following methods:

(1) Turn "FILAMENT" pointer to the left. This decreases the volume by reducing the filament temperature, thus prolonging the life of the Radiotrons. The pointer should, however, be set far enough to the right to maintain a good quality of reproduction.

(2) Turn "VOLUME CONTROL" pointer toward "SOFT".

(3) Insert the telephone plug into the first stage telephone jack H (Fig. 13).

(4) Rotate the loop until the best position is found.

(5) On powerful near-by stations an additional reduction is often necessary. This may be obtained by holding the right-hand station selector drum firmly in position and moving the left-hand drum a few divisions either forward or backward until the desired intensity is obtained. Note that the new position of the left drum affects only the intensity or volume of the signal, while a slight change in the position of the right drum affects the quality of reproduction. Therefore the right-hand drum should be adjusted with extreme care.

Interference. Signals from an interfering radio station may be eliminated, or at least minimized, by either of the following methods:

(1) While holding the left-hand drum **G**, rotate the right-hand drum **N** forward or backward by approximately 10 scale divisions to find another position of this control, where the desired station will be again heard. The setting of the right-hand drum nearer the 0 end of the scale is technically called the "lower frequency peak," and the other the "upper frequency peak." Two settings of this nature will be found for all broadcasting stations, and the separation between them will be found approximately the same throughout the whole length of the scale. It is recommended that the right-hand drum **N** be consistently set at the "lower peak" in the manipulation of Radiola 25. (When this is done, the graduations showing the settings of the right-hand drum will correspond very closely with those of the left-hand drum.)

When interference is encountered, shift to the other "peak" and use the one which gives minimum interference.

A station within easy receiving range operating at a frequency below 680 kc. can usually be tuned in at four (instead of the usual two) positions of the right-hand drum. This effect occurs in normal operation of this Radiola and is not an indication of any defect in the Radiola. It is recommended that one of the two settings of the right-hand drum N, which corresponds approximately to that of the left-hand drum G, be used.

(2) Two distant stations on the same frequency may be separated by rotating the loop, provided they are not in the same general direction from Radiola 25. Set the loop on Radiola 25 where best results are secured, trying to locate a position where the interference or undesired signals do not come in, but the desired signals do.

Head Telephones. If it is desired to locate distant stations with a pair of head telephones, the telephone plug may be inserted in the first stage telephone jack (Fig. 15).

Calibration. The buff surfaces on the drums of the Station Selector Control (see Fig. 16) provide a means for recording the settings of the various stations. Once a station is recorded, the drums may be reset at any later time to these positions, and if the station is broadcasting and reception conditions at the particular time are favorable, it should be heard. Before starting to record these settings, the operator should become familiar with the controls, and accustomed to tuning in stations. Records should be made with a soft pencil and should be as small and neat as possible, to permit the recording of the maximum number of stations. Should the frequency assignments of the broadcasting stations be changed, and should it consequently be desired to change the markings, erasures may be made with a soft eraser, using light pressure.

Note that in a few places throughout the country, particularly in the metropolitan areas, there may be two or more stations assigned to the same wavelength or frequency, but apportioned different hours of the day so that they will not be "on the air" at the same time. Examples of duplicate frequency assignments will be found in the "List of Broadcasting Stations" in the rear of the pages of this booklet. Under such conditions, the drum settings should be the same for both stations.

Station Log. The log sheets in the back of the book may be used to record stations heard, if it is preferred not to mark on the Station Selector drums or if a more detailed record is desired.

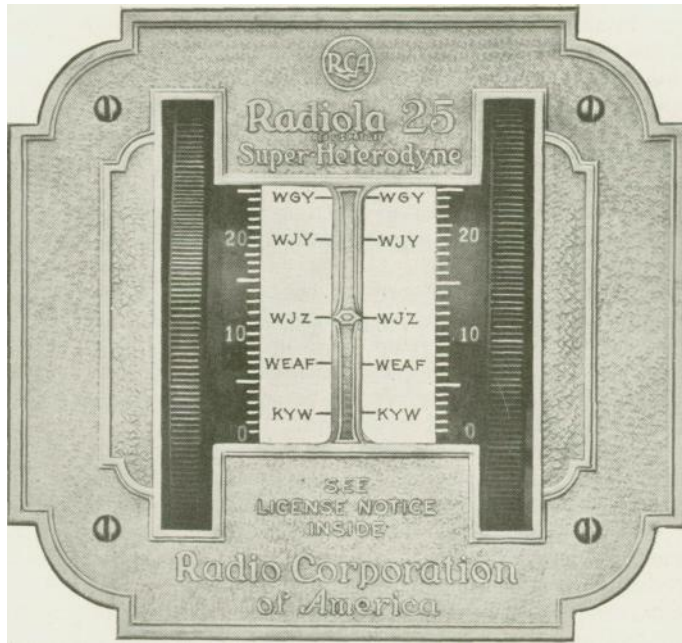


Fig. 16. Calibration on Station Selector Drums

To calibrate make a short dash on each dial drum immediately opposite the center indicator and mark the station call letters opposite each dash.

MAINTENANCE

Radiotrons. It is good practice to keep one or more spare Radiotrons of each type on hand for emergency use. This affords some insurance against interruptions in service on account of possible failure of a Radiotron, and permits ready detection of any Radiotron not operating properly. When not mistreated, the Radiotrons should operate satisfactorily for many months. They may, however, be seriously damaged, or their normally long useful life lessened by:

- (1) Mechanical injury resulting from dropping or severely jarring them, causing displacement of the internal elements or breakage of the filaments.
- (2) Electrical injury caused either by advancing the "BATTERY SETTING" control further in a clockwise direction

than is necessitated by the condition of the "A" battery or by accidental short-circuit of the "B" battery through the filaments.

When the filaments are operated at too high a voltage ("BATTERY SETTING" pointer advanced too far), the active material in the filaments is rapidly driven off, and the useful life of the Radiotrons and batteries is considerably shortened, without proportional increase in signal strength or ease of operation. If it is suspected that the filaments have been so damaged, it is recommended that the Radiotrons be taken to the Authorized RCA Dealer from whom the Radiola was purchased to be tested.

Often, improved operation may be obtained by interchanging the UX-199 Radiotrons. This may be the case even when the Radiotrons are new. The UX-120 Radiotron must always be used in socket 6, at the left-hand end. The user can tell whether this Radiotron is in operating condition by switching a telephone headset or separate loudspeaker from the first stage jack H to the second stage jack M, Fig. 13. There should be a noticeable increase in signal strength when connected to the second stage. If there is not, the UX-120 Radiotron should be replaced.

Of the five UX-199 Radiotrons, the one in socket 2 (second from the right when facing the front of the set) is the most important, and it is well to determine whether this Radiotron is working properly. This may be done by touching a moistened finger to the plates of the variable condenser on the right-hand side of the panel. A sharp click should be heard in the loudspeaker. If none is heard, try interchanging this Radiotron with either the first, third, or fifth Radiotron, applying the click test each time. Use for the fifth Radiotron the one which gives the sharpest click in the loudspeaker. A tendency to howl can usually be eliminated by:

- (1) Interchanging the Radiotron in socket 4 (4th from the right) with any of the remaining Radiotrons except those in sockets 2 and 6.

- (2) Making a slight readjustment of the "BATTERY SETTING" pointer.

- (3) Moving the loudspeaker to a different position with relation to the Radiola. It is recommended not to place the loudspeaker on the top of the cabinet.

Battery Connections. These should be kept tight at all times. A loose connection is likely to result in faulty operation, such as noise in the loudspeaker or reduced signal strength, or make the receiver inoperative. An occasional inspection of the battery connections is desirable.

Filament or "A" Battery. There are several indications by which the user may determine that the filament or "A" battery is becoming exhausted. These are low filament brilliancy, weak signals, and distortion, the signals becoming less and less recognizable. When it is found necessary to turn the "BATTERY SETTING" control up to 10, and the operation of the set is still unsatisfactory (or the voltmeter, if used, fails to register at least 3.0 volts with the "BATTERY SETTING" knob at 10), the filament battery is exhausted. When this condition is reached, the 6 "A" cells should be replaced by new ones.

Plate or "B" Batteries. When signals become weak with the filaments lighted properly and other conditions normal, or if operation becomes noisy, the "B" batteries should be replaced. If a high-grade high-resistance voltmeter is available, the batteries may be tested. They should be discarded when the voltage has fallen to 17 volts for a 22 ½ - volt block, or to 34 volts for a 45 -volt block.

Grid or "C" Battery. Indications of an exhausted "C" battery are distorted signals and a tendency to howl. The best practice is to renew the 45-volt "C" battery whenever the "B" batteries are replaced.

NOTE.—All measurements of "A", "B" and "C" voltages should be made under "load" conditions; that is, with the Radiotrons lighted.

Important. If any difficulty should arise which appears to be elsewhere than in the Radiotrons or batteries, it is recommended that the Authorized RCA Dealer from whom the instrument was purchased be consulted.

Polishing the Cabinet. Finger marks resulting from handling the cabinet may be removed by an application of furniture polish and the finish thus restored. The polish chosen should be a grade which will leave the cabinet free from an oily appearance. Rub to a dull gloss finish, using a piece of cheese cloth or other material free from lint.

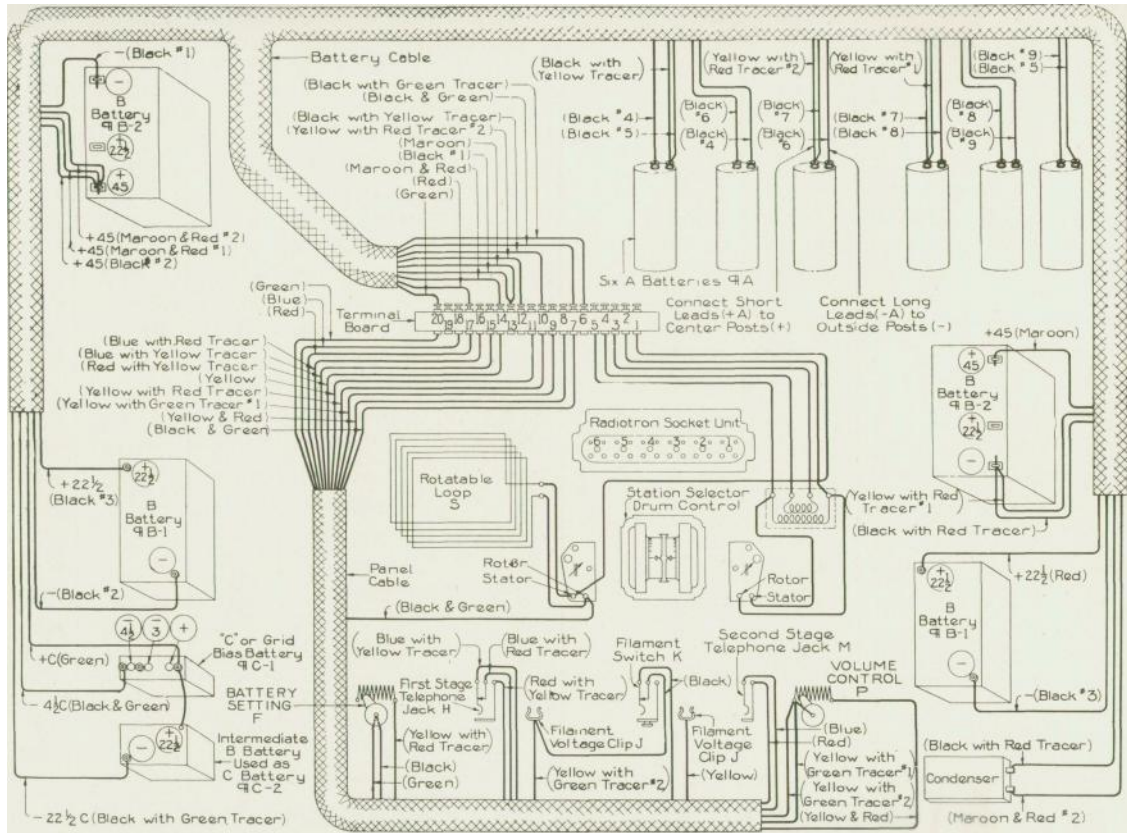


Fig. 17. Wiring Diagram of Radiola 25

NOTE.—In this wiring diagram, two or more leads of a like color contained in the same cable may be distinguished by the numeral following the color designation at each end of a given lead.

SIMPLIFIED LIST OF BROADCASTING STATIONS
For Complete Lists See Newspapers or Radio Magazines

Freq. in K.C.	Call	Wave-length Meters	City State	In the Same City	Freq. in KC.	IN ANOTHER CITY	
						Call	City . State
1000	WPG WLIB	299.8	Atlantic City.N. J.	WAHG	1000	fKSL	Salt Lake City.. . . .Utah
990	WJAR	302.8	Elgin.111.	WHB	990	\KFMQ	Fayetteville..... Ark.
980	KDKA C	305.9			980	WGN	Chicago. 111.
970	WGBS	309.1	Pittsburgh.... .Pa.		950	KTCL	Seattle.Wash.
960	WGR KOA	312.3	Canada		940	fKPSN \	
950	WSAI C	315.6			930	KFDM	Beaumont. Tex.
940	WBZ WCAL	319.0	Buffalo.... .N.Y.		920	WSMB	New Orleans..... La.
930	WMCA	322.4	Denver..... Colo.		890	WJAZ	
920	WLS WEEI	325.9	Cincinnati..... Ohio		880	WKRC	
910	WWJ C	329.4	Canada		870	/ WJAX	Jacksonville..... Fla.
900	WQAO	333.1	Springfield..... Mass.		860	\KNX	
890	KGO WDAF	336.9	Northfield. Minn.		850	fKSAC \	
880	WEBH	340.7	Hoboken. N. J.		833	WKAQ	San Juan. P. R.
870	KTHS	344.6	Chicago. 111.		830	[KFAB	Lincoln..... Nebr.
860		348.6	Boston..... Mass.		810	WCBD	Zion.. . . .111.
850		352.7	Detroit. Mich.			fKWSC	
840		356.9	Canada New York. N.Y.			\KOB	State College..... N. M.
833		360.1	Oakland.... .Cat.			WJAD	Waco..... Tex.
830		361.2	Kansas City..... Mo. Chicago.			KZUY	Baguio.....P. L
820		365.6 111. Hot Springs..... Ark.			WHN	New York.. . . .N. Y.
810		370.2				WJJD	Moosehart..... 111.
800		374.8					

790	WGY	379.5		WGBU	800	KVOO	Bristow..... Okla.
780	WMBF	384.4	Miami Beach..... Fla.	WEAR	790	WHAZ	Troy..... N.Y.
770	WTAM	389.4	Cleveland..... Ohio	WFI	780	KJR	CQQ +f1r> Wn cTI
760	WLIT	394.5	Philadelphia..... Pa.	WQJ	760	WOAI	San Antonio..... Tex.
750	WHAS WJY	399.8	Louisville..... Ky.	WCAP	740	fKHJ WOR	
740	C WCCO	405.2	New York..... N. Y.	WOO	700	KPO	
730	WLW WSB	410.8	Canada Minneapolis-St. Paul,	WJR	680	fKLDS J	San Francisco..... Cal.
720	WOS	416.4	Minn. Harnson..... Ohio	T^PTTO	660	WDWF /	
710	WMAQ	422.3			640	WMAF [
700	WJZ WCAE	428.3	Atlanta..... Ga.		630	WLSI	Dartmouth..... Mass.
680	WRC WTIC	440.9	Jefferson Citv..... Mo.		620	;KTW ^	
670	WOC	447.5			610	KFOA	Seattle..... Wash.
660	WEAF	454.3	New York..... N. Y.		600	KFI	Seattle Wash
650	WMC WIP	461.3			590	f WFAA \	Los Angeles..... Cal.
640	WCX	468.5	Pittsburgh..... Pa. Washington.		570	WBAP	Dallas..... Tex.
630	WNYC	475.9	Hartford..... Conn.		?>fin	wsm	Port Worth Tex
620	KYW KSD	483.6				KGW	Iowa City..... Iowa
610		491.5	New York..... N.Y.			KFRU	Portland..... Ore.
600		499.7	Memphis..... Tenn.			KLX	
590		508.2	Philadelphia..... Pa.			;WHO f	Oakland..... Cal.
580		516.9				WOAW	
570		526.0	New York..... N.Y.			WHA	
560		535.4					Omaha..... Neb.
550		545.1	St. Louis..... Mo.				Madison..... Wis.

Stations bracketed have same frequency.

NOTICE

The apparatus and devices which, or the use of which, are covered by patents, are sold only under certain specified licenses set forth in a notice attached permanently to the said apparatus and devices, or if this is impracticable on account of size, then on tags or wrappers attached to the said apparatus and devices or on the cartons containing the same. This license notice is as follows:

"In connection with devices it sells. Radio Corporation of America has rights under patents having claims:

(a) on the devices themselves and (b) on combinations of the devices with other devices or elements, as, for example, in various circuits and hookups.

"The sale of this device carries a license under the patent claims of (a) but only for (1) talking machine uses, (2) radio amateur uses, (3) radio experimental uses and (4) radio broadcast reception; and only where no business features are involved.

"The sale does not carry a license under patent claims of (b) except only (1) for legitimate renewals and repairs in apparatus and systems already licensed for use under such patent claims on combinations, (2) for assembling by amateurs and experimenters, and not by others, with other licensed parts or devices, or with parts or devices made by themselves, but only for their own amateur and experimental radio uses where no business features are involved, and not for sale to or for use by others, and (3) for use with licensed talking machines and licensed radio broadcast receiving devices; and only where no business features are involved."

Radio Corporation of America