

**INSTRUCTIONS FOR OPERATING
THE TYPE RORN TUNED
RADIO AMPLIFIER**

RADIO FREQUENCY AMPLIFICATION:

The current flowing in the Plate Circuit of a Vacuum Tube Receiver is proportional to the square of the voltage applied to the Grid of the Vacuum Tube. If the Receiver is properly designed, so as to reduce the losses in the Grid circuit, the voltage on the Grid for a given signal will be relatively high, resulting in a loud response in the telephones. Signals which are barely audible may be considerably increased through the use of Audio Frequency Amplification. When the signal received from a distant station is too weak to register in the Plate circuit, an Audio Frequency Amplifier will not function, and some method must be employed to increase the voltage applied to the Grid of the Detector Tube.

A Regenerative Receiver feeds back energy from the Plate to the Grid circuit, increasing by one hundred times the effective voltage on the Grid circuit; thus making audible signals which could not be heard with the Non-Regenerative Receiver. However, if the incoming signal is too weak to register in the Plate Circuit of the Detector Tube, even with the aid of Regeneration, it becomes necessary to increase the Radio Frequency energy **before** it is applied to the Grid circuit.

Many Radio Frequency Amplifiers have been

constructed, using Resistance, Impedance or Transformer coupling, but these types are inherently limited both as to degree of Amplification and wave-length range. The Grebe Type RORN Tuned Radio Amplifier is unlimited as to wave-length range, and gives the greatest possible Amplification that can be obtained from a Vacuum Tube. This Amplifier may be used in conjunction with any type of receiving apparatus and is particularly adapted for use with the Grebe Regenerative Receivers.

The Internal Wiring Diagram of the Type RORN is shown on page 57. The input, or Grid circuit, consists of an adjustable Inductance and a Variable Condenser (Condenser No. 1). The Antenna Inductance Switch is so arranged that either Loop or Antenna may be used and terminals are provided for connecting the Variable Condenser in shunt with the Loop or in series or shunt with the Antenna Inductance. The output circuit consists of an output coil (four are provided to cover the wave-length range of 150 to 3,000 metres) shunted by a Variable Condenser (Condenser No. 2). Vacuum Tube control is effected by the use of a Rheostat for regulating the Filament current and a Stabilizer for controlling regeneration.

INSTRUCTIONS FOR THE OPERATION OF THE GREBE TYPE RORN TUNED RADIO AMPLIFIER

Connect the RORN Unit with your receiving apparatus in accordance with the diagram showing the particular combination to be used.

It will be noted that a plate battery of 90 volts is shown in the diagrams. Maximum results can not be obtained with a lesser voltage.

Adjust the Receiver to the particular wavelength to be received. (Note) When using the CR-3 or CR-8 Receiver, the Grid Variometer Dial setting for the particular wavelength may be found by reference to page 15. When using the CR-5 or CR-9 Receivers the Antenna and Ground terminals are to be connected together and the Dial settings may be obtained by referring to the wave-length chart for these Receivers "used as Oscillators" on page 23.

Refer to the wave-length curve shown on page 56 and choose the output coil which gives the required wave-length. (Note) If two coils give the same wave-length use the one which requires the lowest dial reading on Condenser No. 2. Set this dial 10 points above the position indicated on the curve. This will make the preliminary adjustments less critical.

Insert U. V. 201 in the Vacuum Tube Socket; turn the Rheostat Wheel to "O" and Stabilizer Wheel to "1."

If a Loop is used, connect the Loop terminals to terminals A and B and connect B and C together as shown on page 53. Consult pages 54 and 55 for the proper Dial setting of Condenser No. 1. If an Antenna is used, set the Inductance Switch in the position shown on page 19 of Grebe Instruction Book for the Type CR-5 and CR-9 Receivers, and set Condenser No. 1 according to this chart.

Adjust the Regenerative Dial on the Receiver to the position where oscillations occur. If no signal is heard, re-adjust both Dials of the Regenerative Receiver until a beat note or signal is heard in the telephones. Then re-adjust the dials of Condenser No. 1 and Condenser No. 2 for maximum signals. The dial of Condenser No. 2 should be rotated very slowly, the correct position always being approached from a higher rather than a lower setting. The Stabilizer should be adjusted until the signals are clarified.

Subsequent adjustments of all dials will result in stronger signals.

In the foregoing instructions it is assumed that the output coil has been placed directly over either the coupling coil of the Type CR-3 or CR-8 or directly over the Variometer of the Type CR-5 or CR-9. The position of this coil may be changed during the final tuning operations. With the CR-3 or CR-8 receiver, adjustment of the coupling dial accomplishes the same result as moving the output coil.

While greater distances may be received with an Antenna, Loop reception is recommended in view of the advantages to be gained in the way of directional effects and freedom from interference. The directional effect of the Loop will be more pronounced if all ground connections are removed from the apparatus.

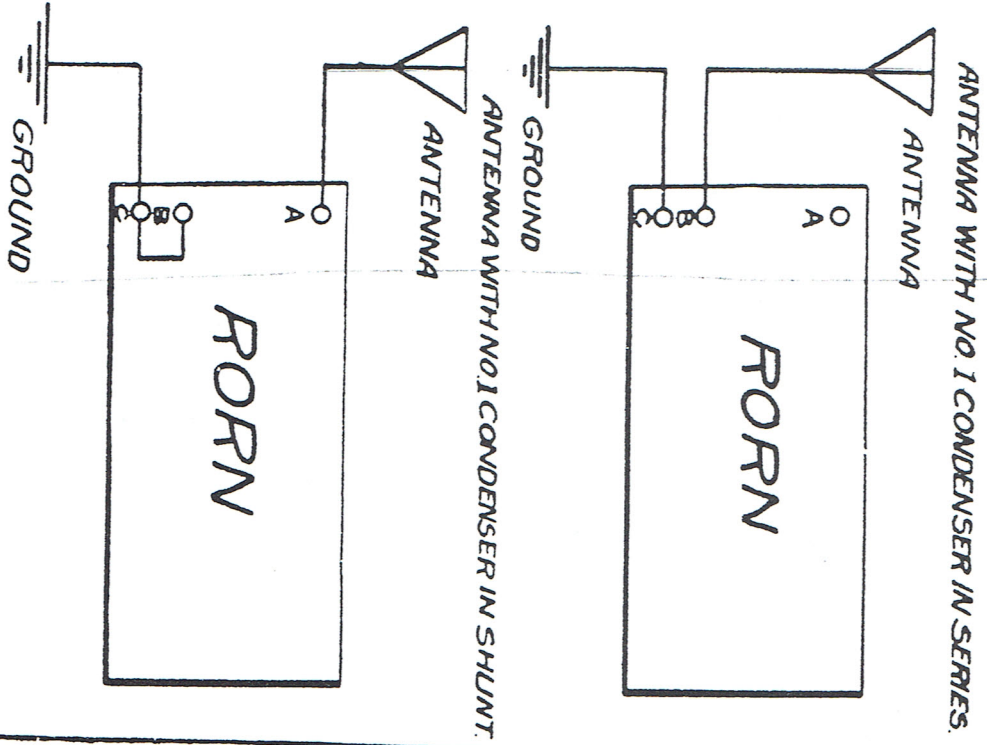
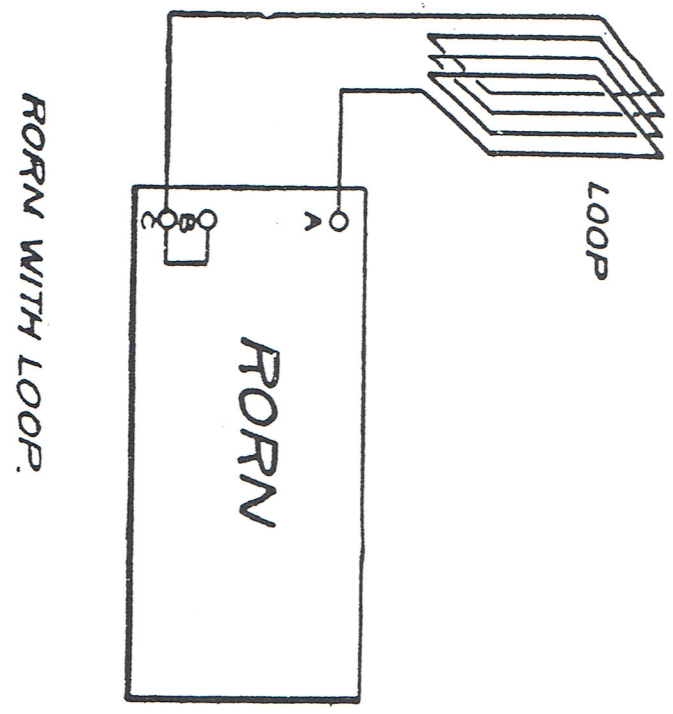
The three-foot Loop gives far better results than the two-foot Loop and should be used wherever space will permit.

A relatively short antenna (40 - 75 feet. Total length) is best for use with the RORN. If a longer antenna is used it may be found advantageous to operate the apparatus with the ground wire disconnected.

CAUTION - When the apparatus is not being used, the Rheostat Wheel on the RORN should be in the "OFF" position; thus preventing useless consumption of current from the filament lighting battery. In combinations where the RORK Amplifier is used this caution may be disregarded as the RORN filament circuit is automatically controlled.

Only one ground connection should be used. This may be connected to either the Receiver or the RORN. The use of two grounds will cause the stabilizer element to be destroyed.

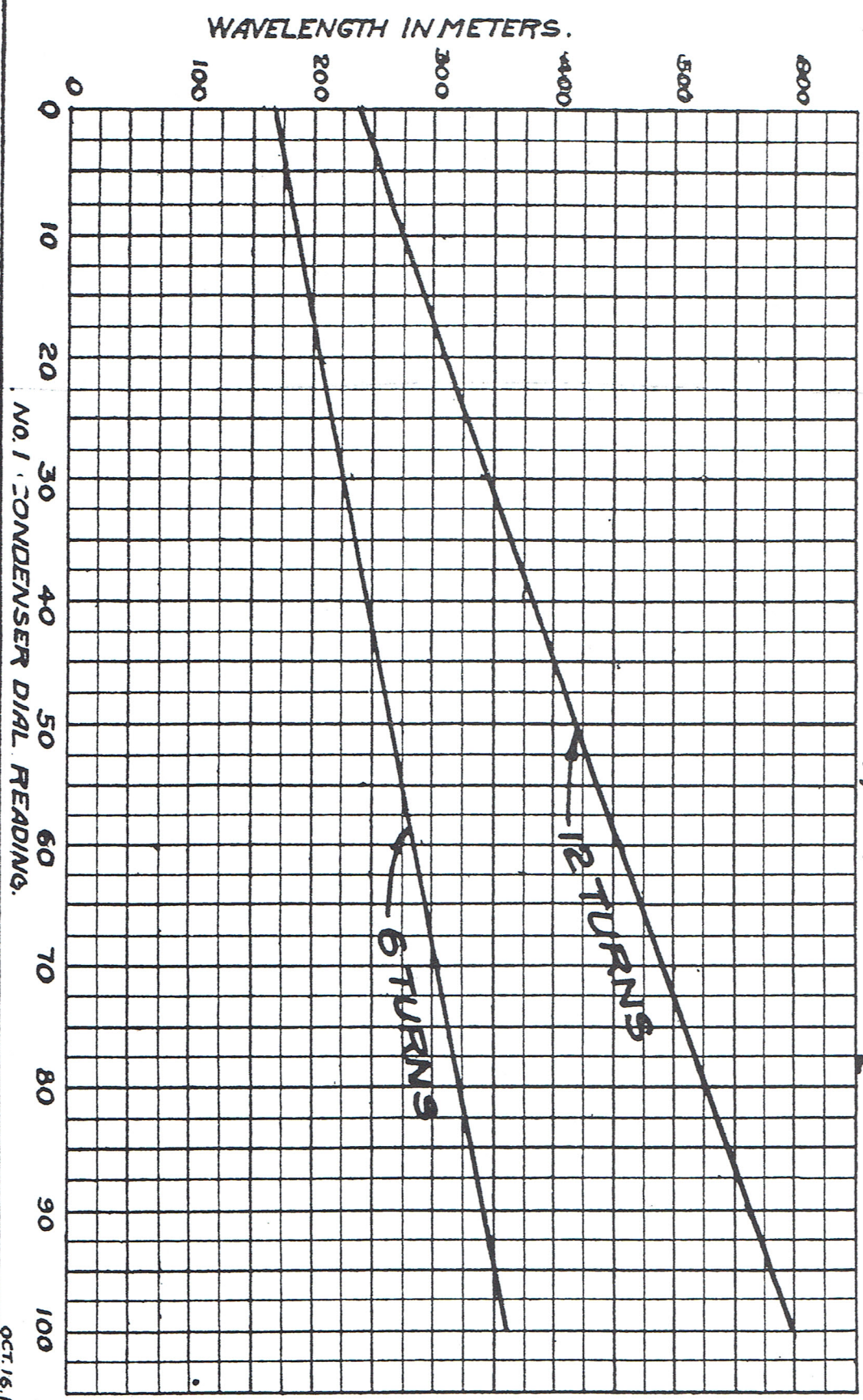
EXTERNAL WIRING DIAGRAM
FOR
GREBE TUNED RADIO AMPLIFIER WITH LOOP & ANTENNA
A. H. GREBE & CO., INC. RICHMOND HILL, N.Y.



WAVELENGTH CURVES

FOR
 2FT. LOOP WITH CONDENSER NO. 1 ON GREBE TUNED RADIO AMPLIFIER
 TYPE RORN

SOLENOID TYPE LOOP 2 FT. SQ., WIRES SPACED 1/2 IN. APART.

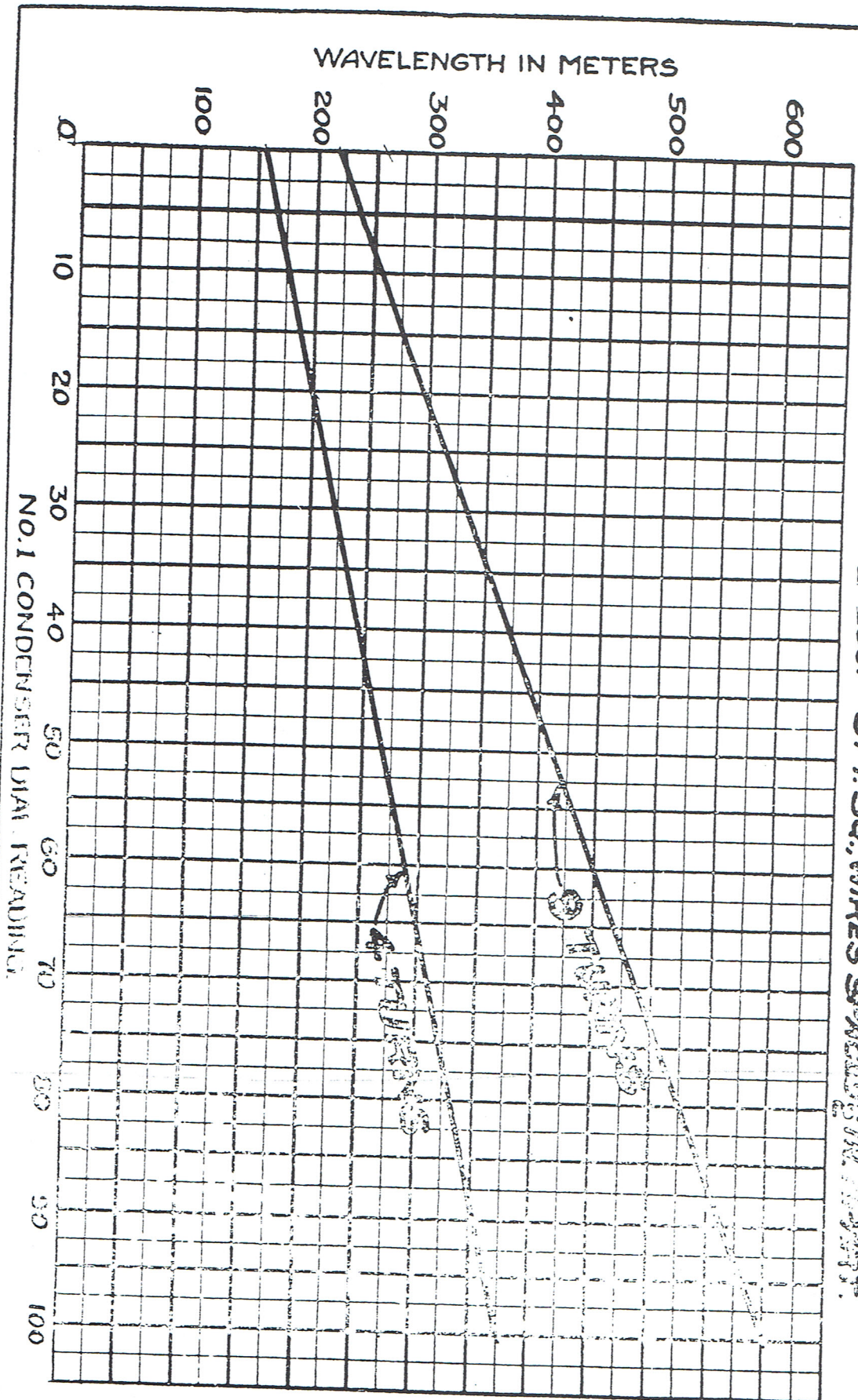


OCT 16, 1922.

WAVELENGTH CURVES FOR

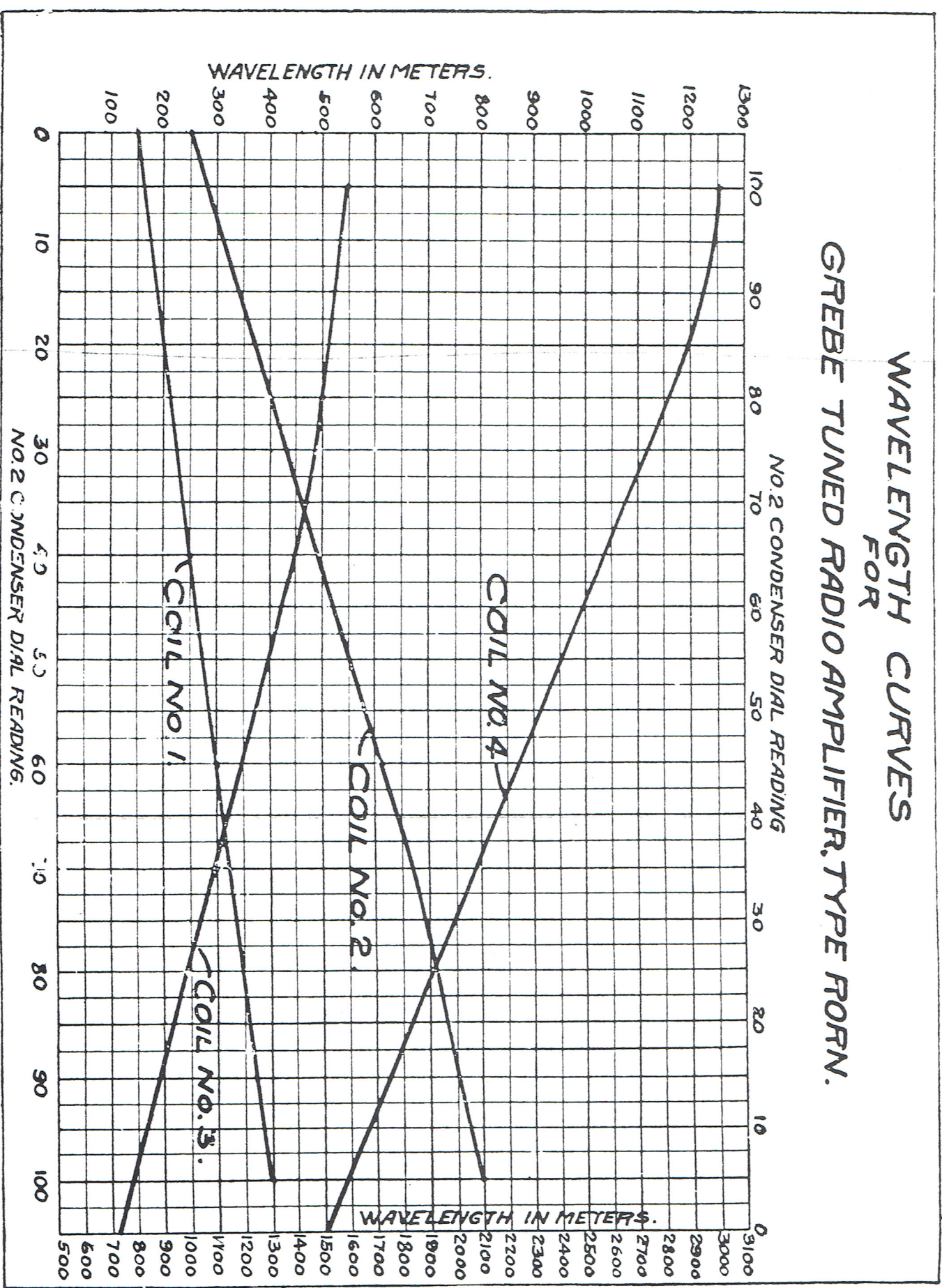
3 FT. LOOP WITH CONDENSER NO. 1 ON GREENE TUNED RADIO AMPLIFIER
TYPE RORN

SOLENOID TYPE LOOP 3 FT. SQ. WIRES SPACED 1/4 IN. APART.



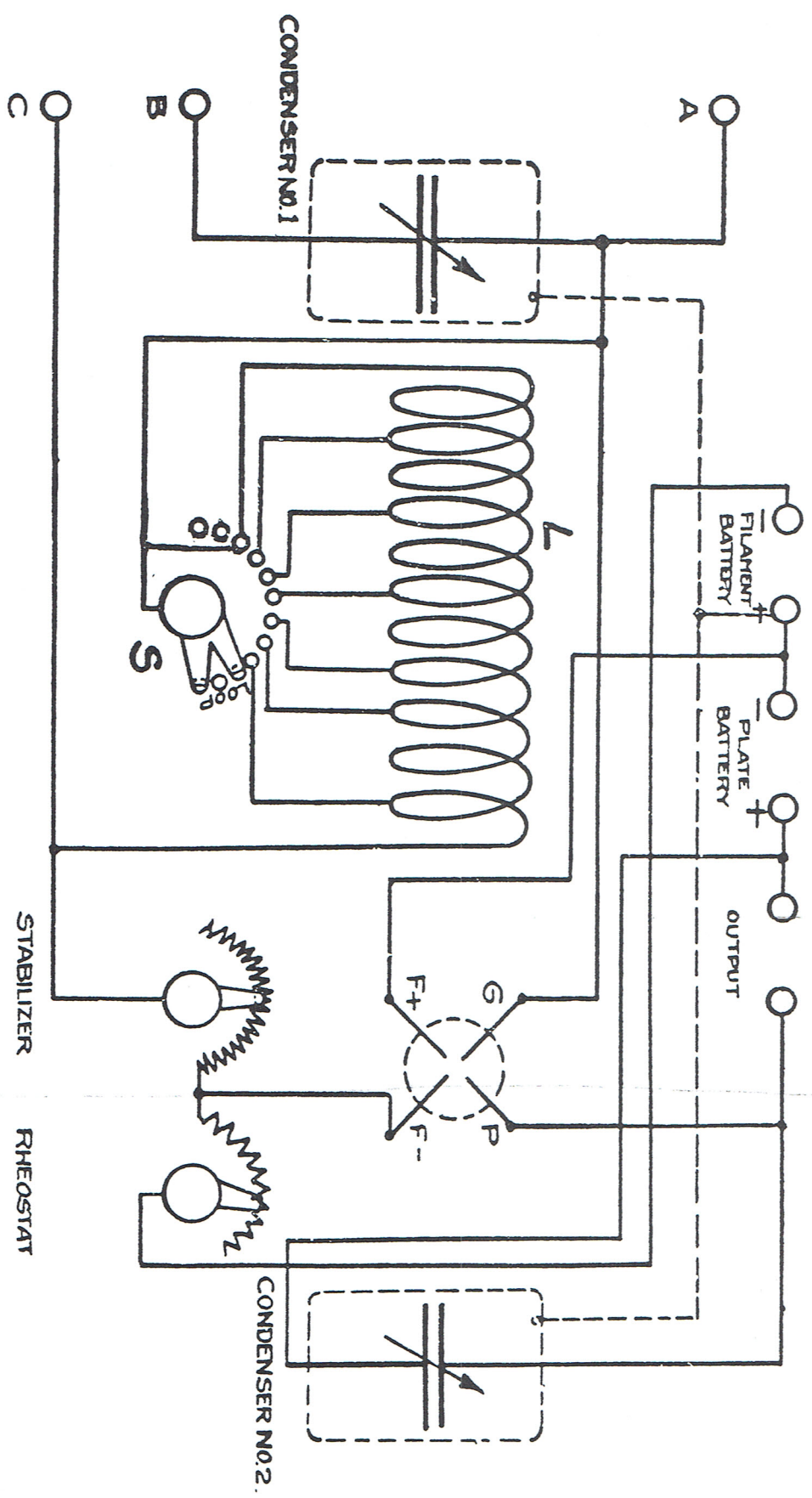
9512722

WAVELENGTH CURVES FOR GREBE TUNED RADIO AMPLIFIER, TYPE FORN.

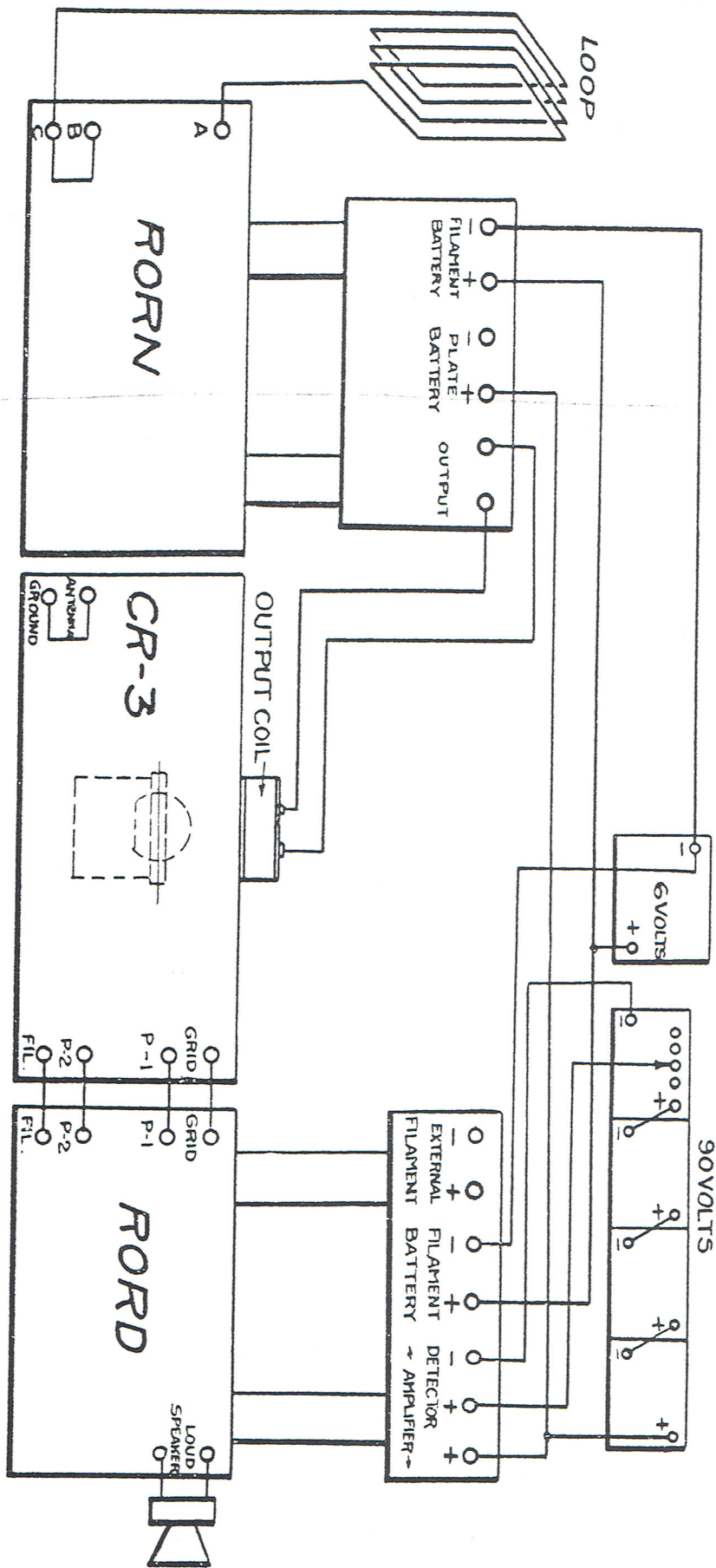


INTERNAL WIRING DIAGRAM FOR GREBE TUNED RADIO AMPLIFIER, TYPE RORN.

A. H. GREBE & CO., INC. RICHMOND HILL, N.Y.

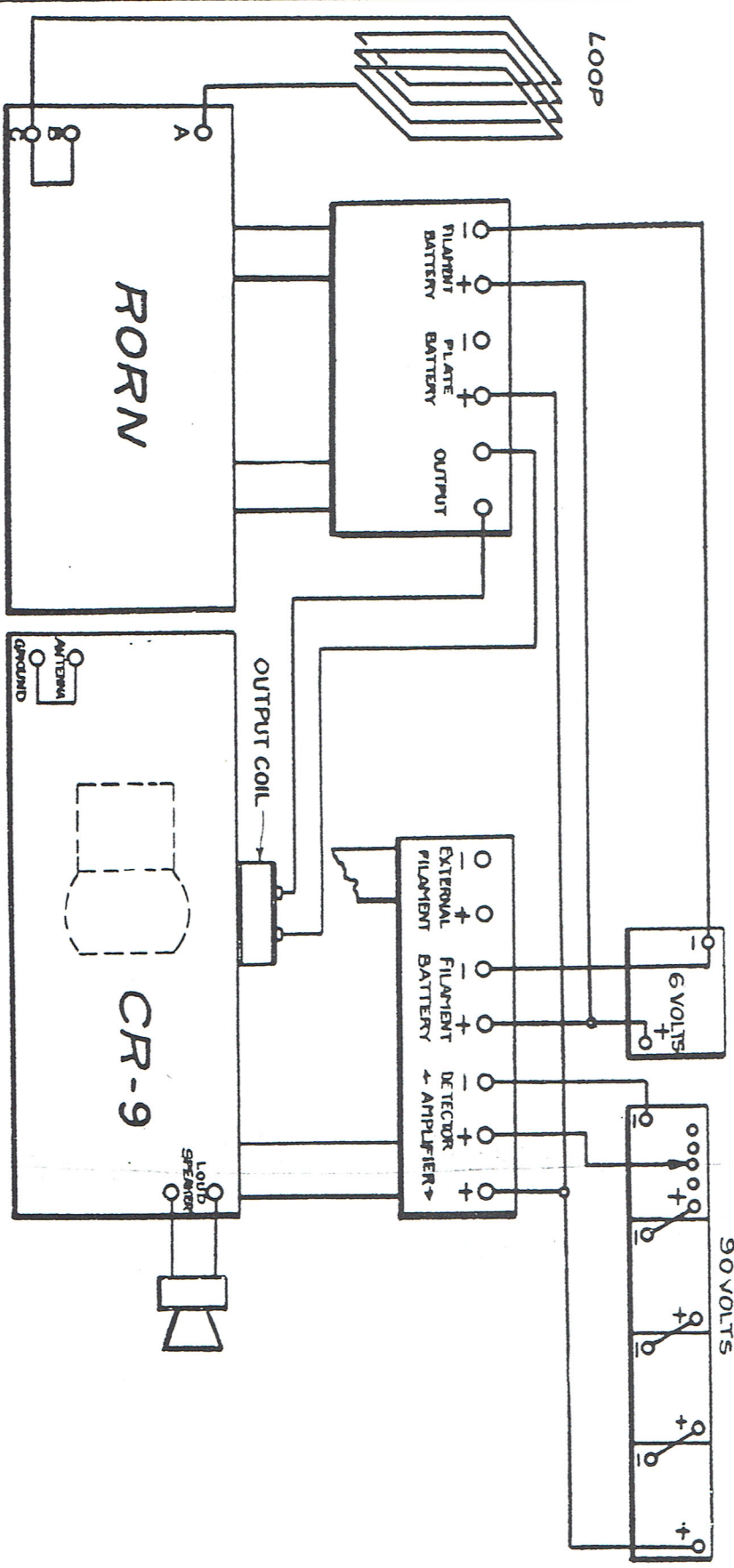


**EXTERNAL WIRING DIAGRAM
FOR
GREBE TUNED RADIO AMPLIFIER TYPE RORN WITH CR-3 RECEIVER & RORD AMPLIFIER**
A. H. GREBE & CO., INC. RICHMOND HILL, N.Y.



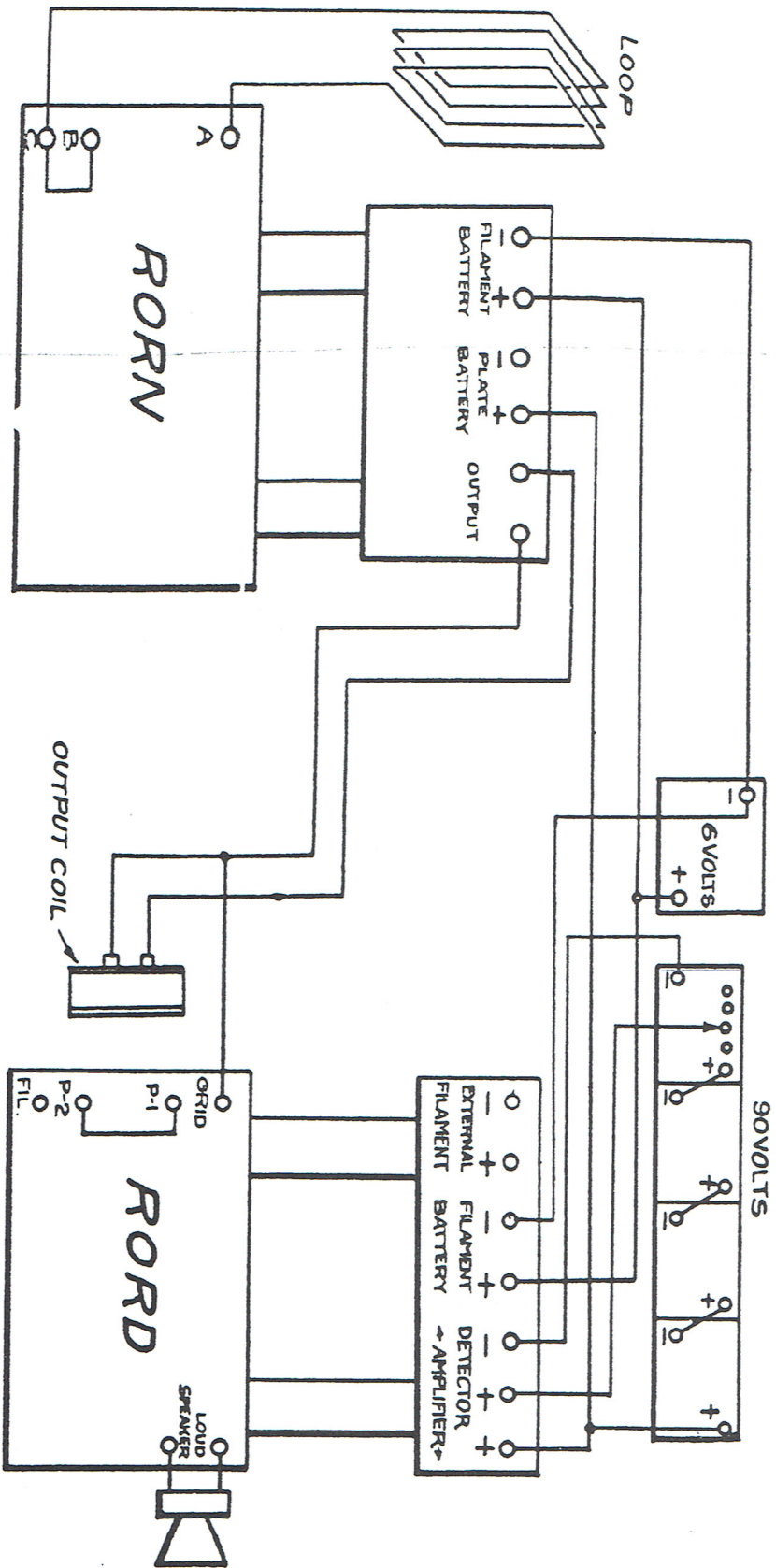
OCT 27, 1922

**EXTERNAL WIRING DIAGRAM
FOR
GREBE TUNED RADIO AMPLIFIER TYPE, RORN & CR-9 RECEIVER
A. H. GREBE & CO., INC. RICHMOND HILL, N. Y.**



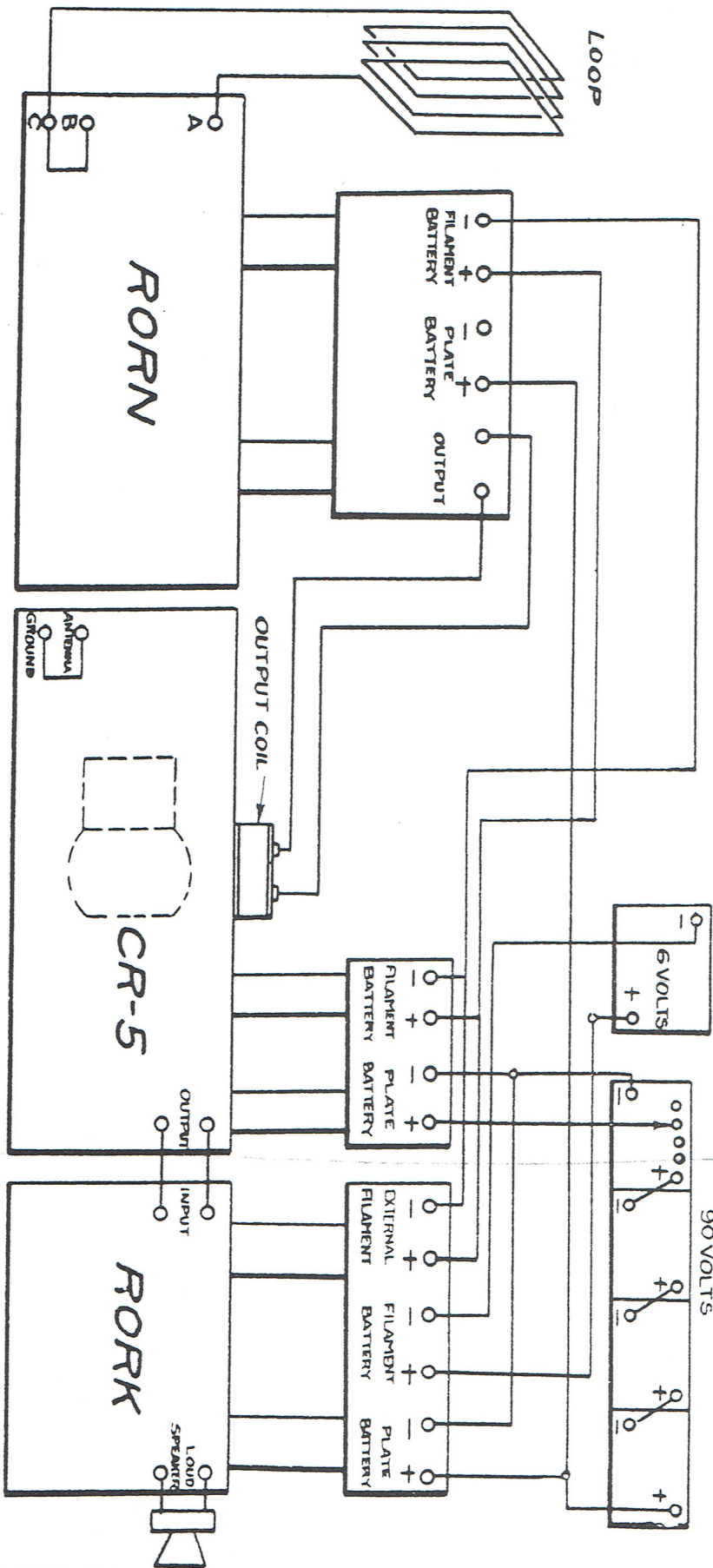
OCT. 27 1922

EXTERNAL WIRING DIAGRAM FOR GREBE TUNED RADIO AMPLIFIER TYPE RORN & RORD AMPLIFIER A. H. GREBE & CO., INC. RICHMOND HILL, N. Y.



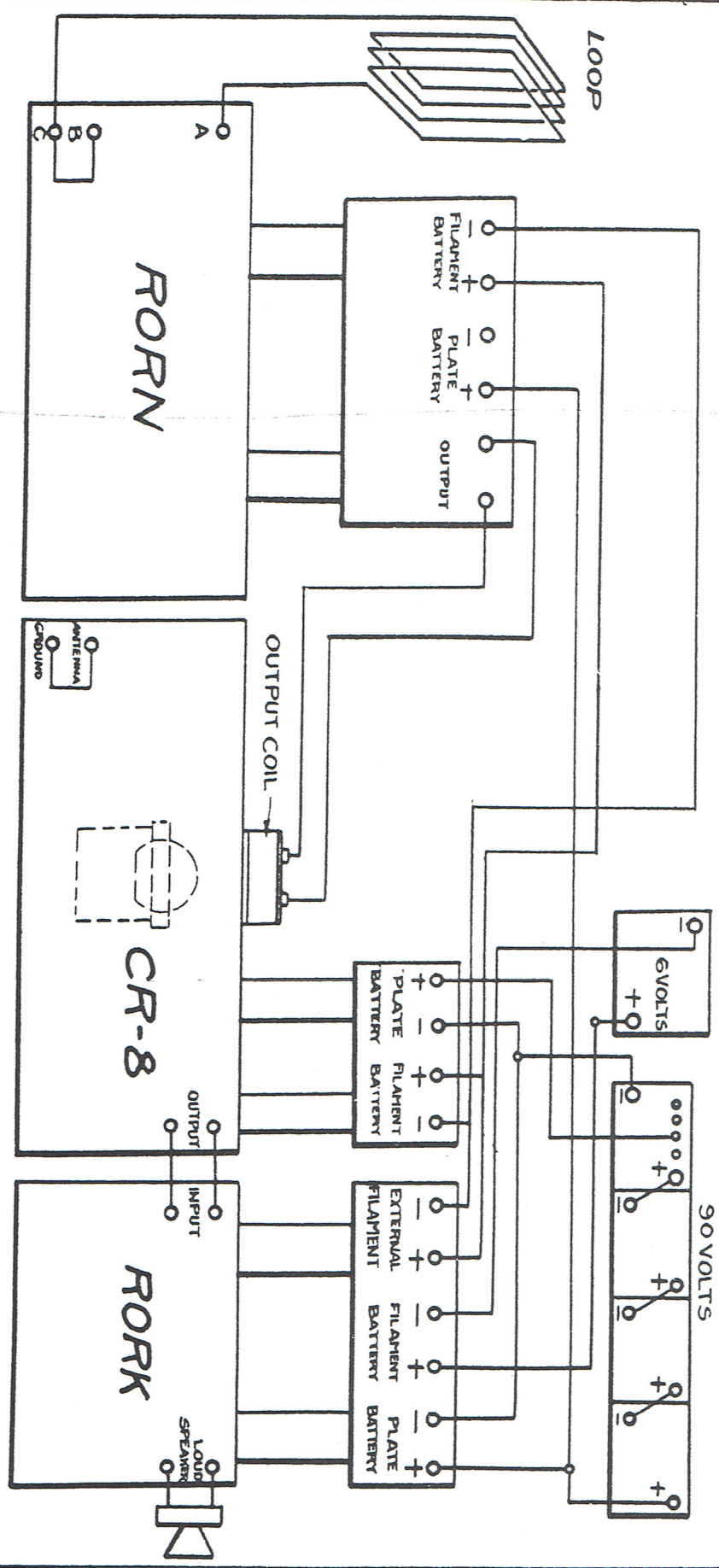
OCT. 28 1922.

**EXTERNAL WIRING DIAGRAM
FOR
GREBE TUNED RADIO AMPLIFIER TYPE RORN WITH CR-5 RECEIVER & RORK AMPLIFIER**
A. H. GREBE & CO., INC. RICHMOND HILL, N.Y.



OCT 28 1922

EXTERNAL WIRING DIAGRAM
FOR
GREBE TUNED RADIO AMPLIFIER TYPE RORN WITH CR-8 RECEIVER & RORK AMPLIFIER
A. H. GREBE & CO., INC. RICHMOND HILL, N.Y.



ILLUSTRATIONS

	Pages
Details of Antenna Construction.....	8
Views of Typical Installation.....	11-12
Wave-length Curves, Types CR-8 and CR-3.....	14-15
Wave-length Charts, Types CR-9 and CR-5.....	19
Wave-length Chart for Types CR-9 and CR-5 used as Oscillators.....	23
Internal Wiring Diagram Type CR-8.....	28
Internal Wiring Diagram Type CR-3.....	29
External Wiring Diagram Type CR-3.....	30
Internal Wiring Diagram Type CR-9.....	36
Internal Wiring Diagram Type CR-5.....	37
Internal Wiring Diagram Type RORD.....	39
Internal Wiring Diagram Type RORK.....	40
External Wiring Diagrams for Combinations.....	42-43
External Wiring Diagram For RORN Amplifier with Loop and Antenna	53
Wavelength Curves For RORN Amplifier with 2-ft. Loops.....	54
Wavelength Curves For RORN Amplifier with 3-ft. Loops.....	55
Wavelength Curves For RORN Amplifier Output Circuit.....	56
Internal Wiring Diagram For RORN Amplifier.....	57
External Wiring Diagram For RORN—CR-3—RORD Combination.....	58
External Wiring Diagram For RORN—CR-9 Combination	59
External Wiring Diagram For RORN-RORD Combination	60
External Wiring Diagram For RORN—CR-5—RORK Combination.....	61
External Wiring Diagram For RORN—CR-8—RORK Combination.....	62

BATTERY PRINTING CO., JAMAICA, N Y.

64.
