ENGINEERING DATA
FOR
STROMBERG CARLSON NOS. 641, 642, 652 AND 654 RECEIVERS

The Radio Amplifier employs the new UY-224 tubes in three tuned stages giving extra sensitivity. The amplifier incorporates four tuning circuits insuring excellent selectivity.

The antenna coupling system is designed so that absolute "Single Selector" operation is obtained without the use of "trimming" or vernier controls on the first tuning circuit and without sacrificing sensitivity.

A UY-227 tube is used as a "linear" power detector with automatic bias. This type of detector operates at high radio frequency voltages provided by the radio amplifier and prevents distortion common to the ordinary "square law" detector particularly when signals are received from new broadcast stations with high modulation. The grid bias is automatically adjusted to the proper value for the strength of signal received to obtain this "linearity". This type of detector does not overload readily, and the output of the receiver is automatically prevented from passing the levels of serious overload and "blasting" in the power output stage.

The high quality audio system of the Nos. 641, 642, 652 and 654 Receivers uses a single power output tube, the new UX-245 power tube, fed directly from the detector. This power tube makes available plenty of reserve output power for peak demands. Improved quality and fidelity are obtained by feeding directly from the detector.

The power supply of this receiver consists of a power transformer, and UX-280 full wave rectifier, and two stages of a special design of filter. A voltage divider made up of two large vitreous enameled resistors provides the proper voltages for the tubes. These large resistors insure long life and freedom from trouble.

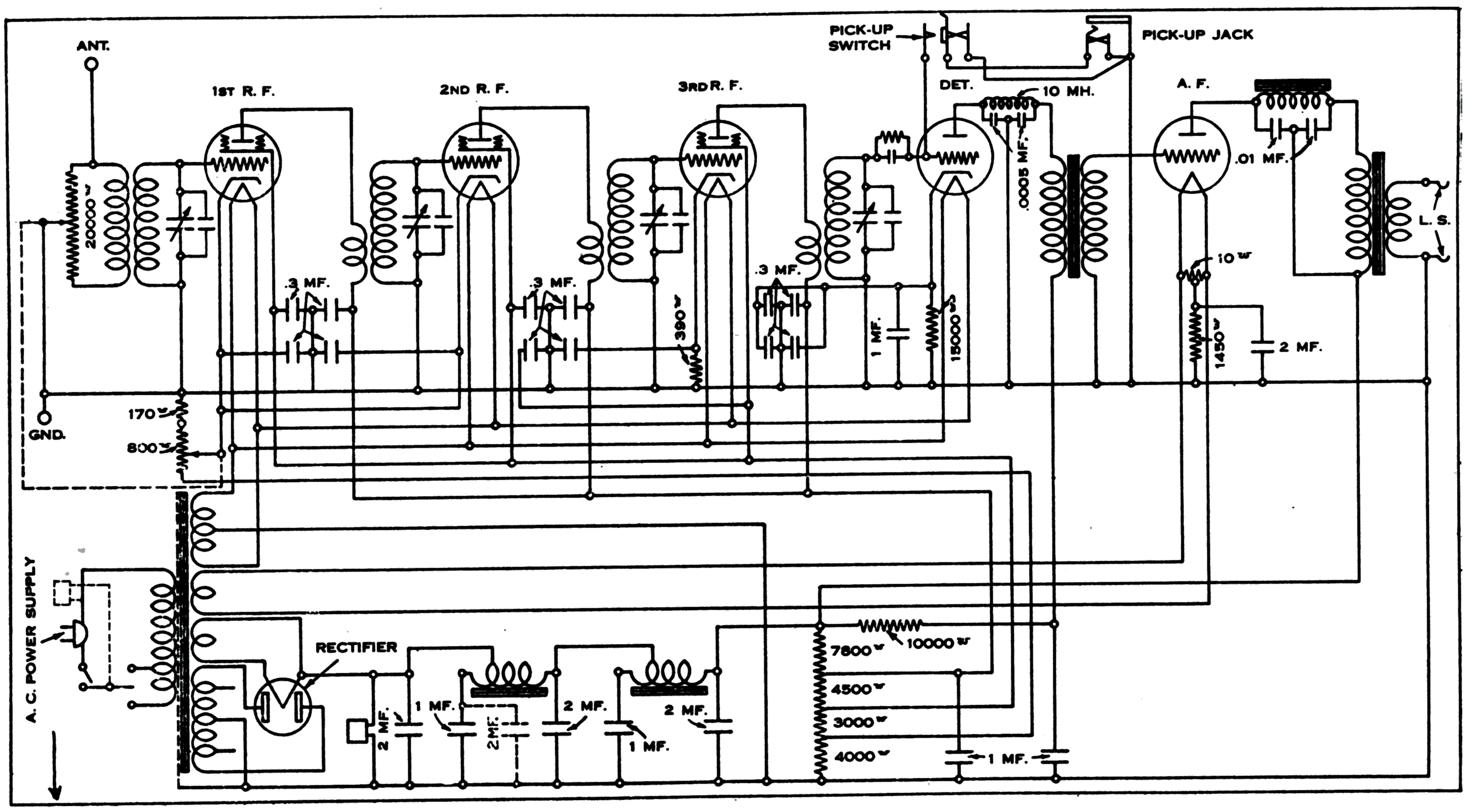
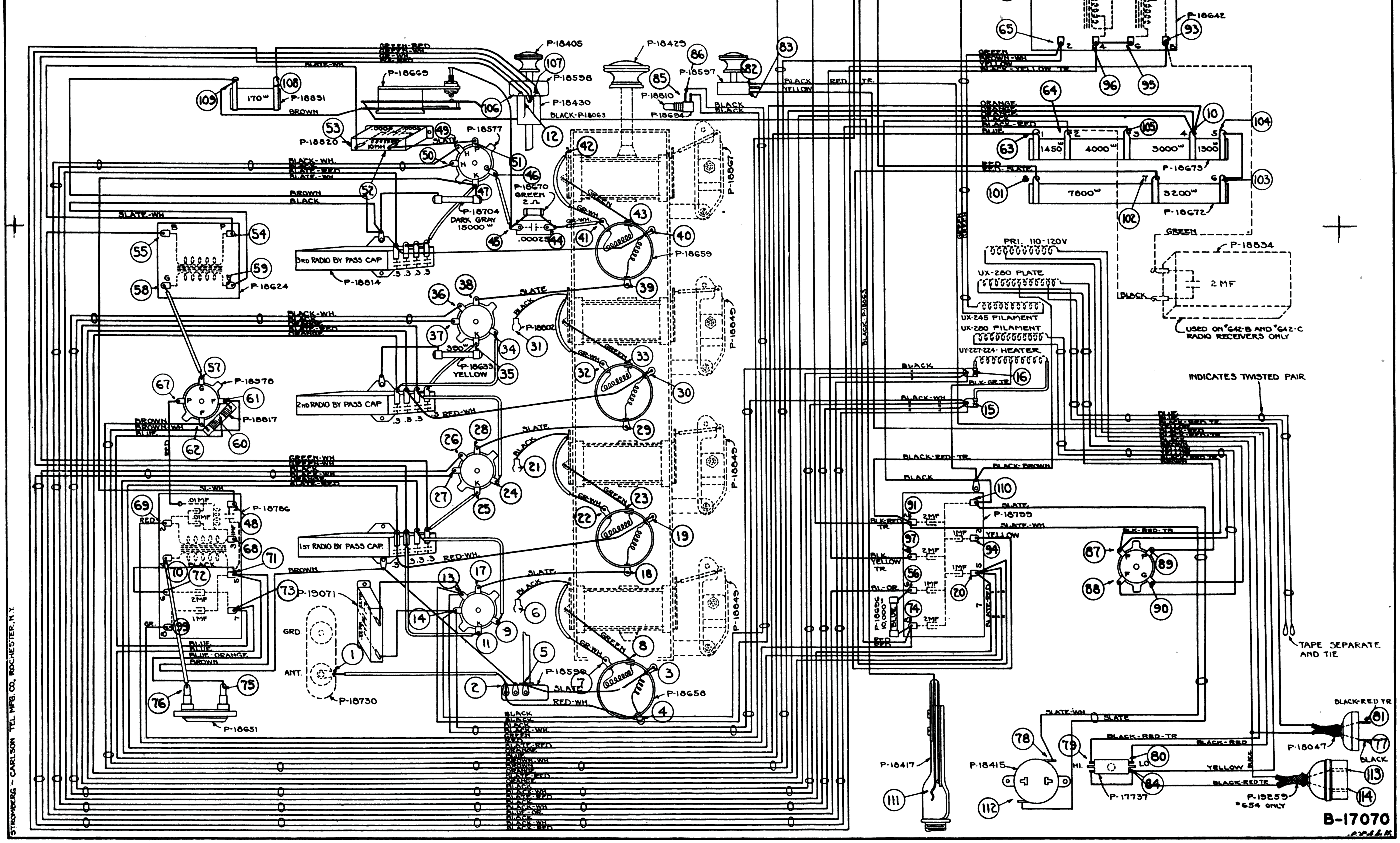


Fig. 1. Schematic Circuit

NORMAL VOLTAGE READINGS

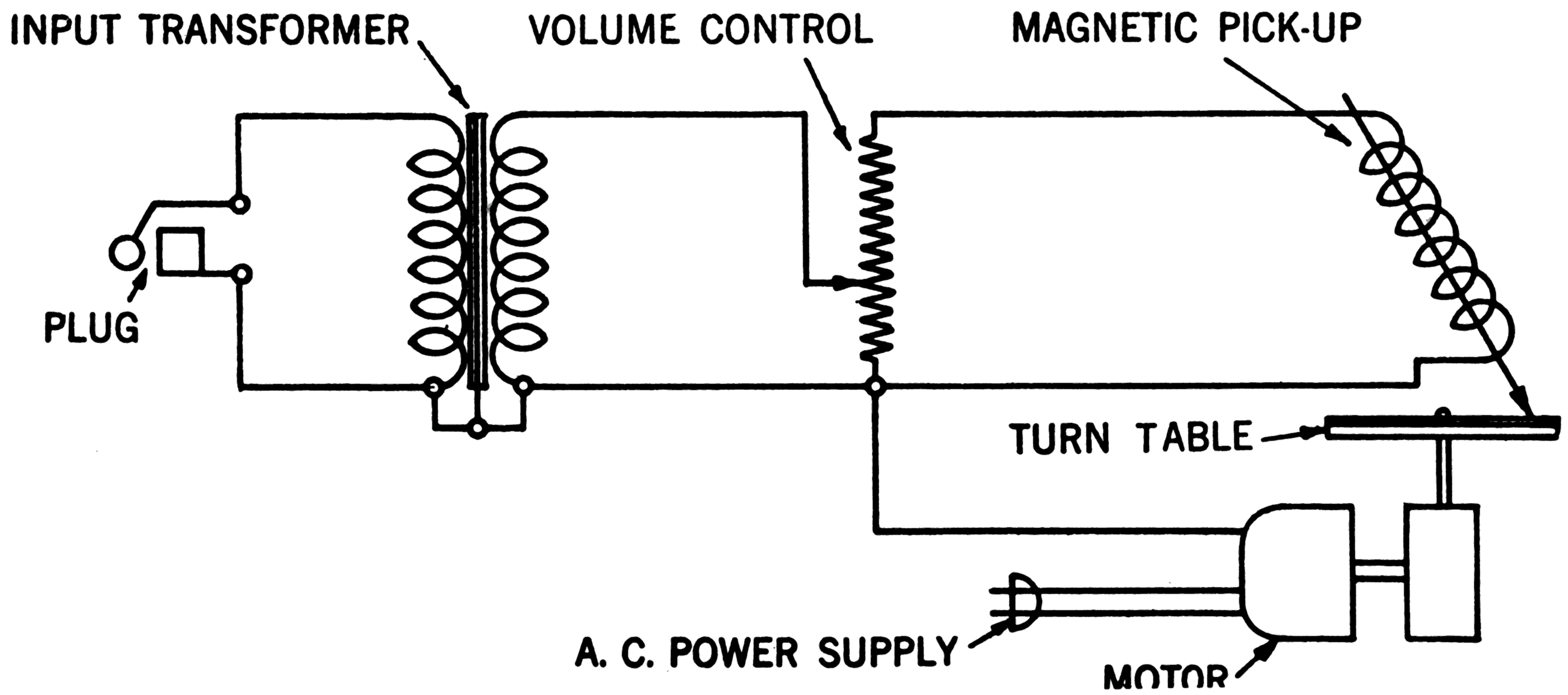
These voltage readings correspond to a line voltage at 120 volts with the HI-LO Switch in HI or at 110 volts with Switch in LO. When voltages are measured, proper allowances should be made for a difference in line voltage above or below 110 or 120 volts. Be sure to make these readings with the Meter and Scale indicated, otherwise the results will not agrff with those tabulated. Alternating voltages are indicated in italics.

RED NUMBERS IN CIRCLES ARE USED FOR CONTINUITY TESTS.
ALL NUMBERS SIMILARLY ENCLOSED IN CIRCLES ON SCHEMATIC CIRCUITS AND DETAILS OF APPARATUS INDICATE CORRESPONDING TERMINALS ON THIS WIRING DIAGRAM FOR CONTINUITY TESTS.



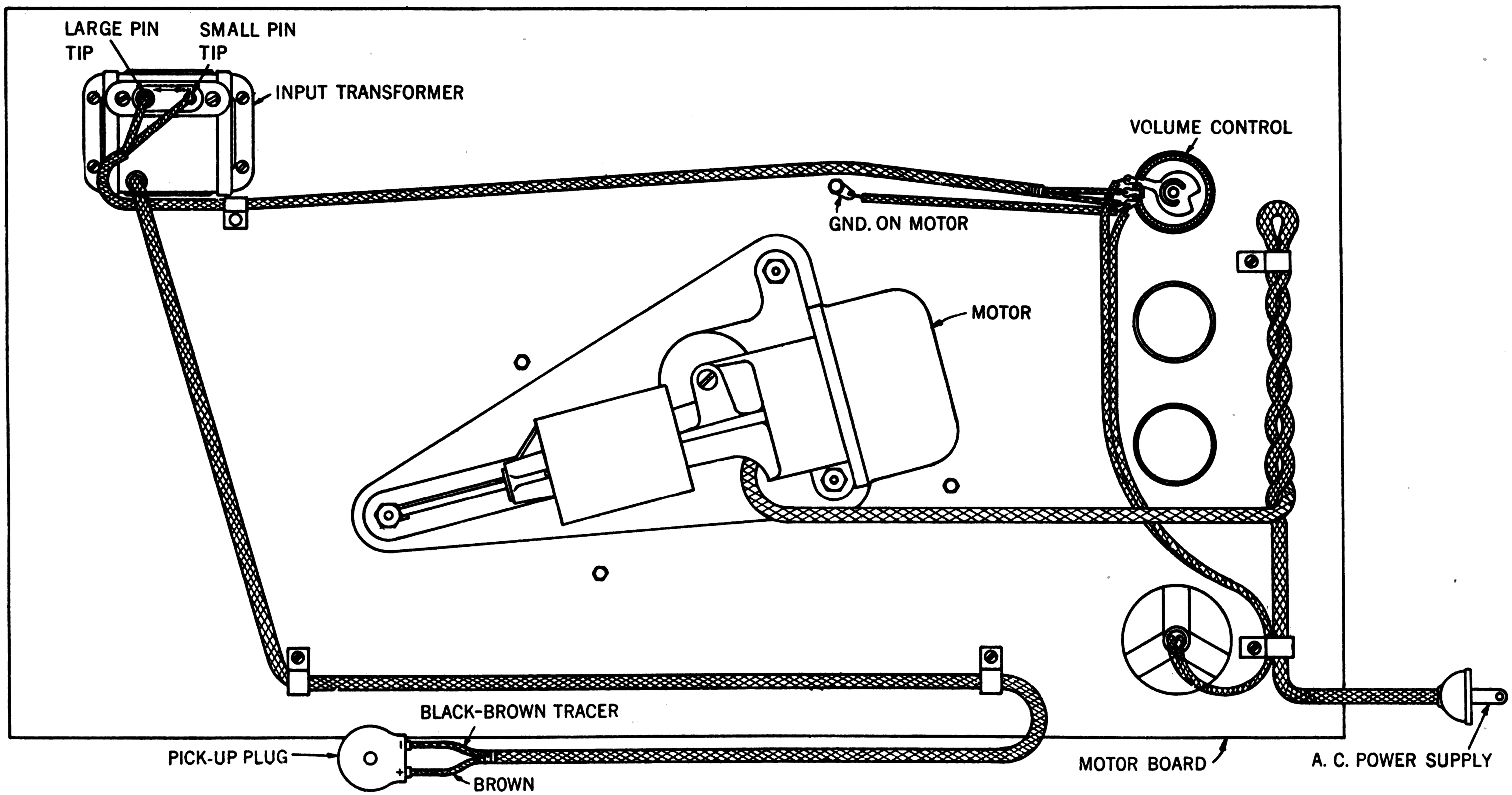
Voltage	*Meter*	*Measured Between Connection Numbers*	*Approximate Normal Value in Volts*	*Remarks*
Heater Voltage UY-224 UY-227	A. C.	13 and 14 26 and 27 36 and 37 49 and 50	2.4	Measured with low scale of Weston Model 528 A. C. Voltmeter*
Filament Voltage UX-245	A. C.	61 and 62	2.4	Measured with low scale of Weston Model 528 A. C. Voltmeter*
Filament Voltage UX-280	A. C.	87 and 89	4.7	Measured with medium scale of Weston Model 528 A. C. Voltmeter*
Plate Voltage UY-224 Radio Amplifier	D. C.	17 and 11 28 and 25 38 and 35	135–145	Measured with 250 volt scale of Weston Model 489 D. C. Voltmeter having a resistance of 1000 ohms per volt*
Plate Voltage UY-227 Detector	D. C.	51 and 47	250	Measured with 250 volt scale of Weston Model 489 D. C. Voltmeter having a resistance of 1000 ohms per volt*
Plate Voltage UX-245 Audio Amplifier	D. C.	60 and 67	240	Measured with 250 volt scale of Weston Model 489 D. C. Voltmeter having a resistance of 1000 ohms per volt*
Plate Voltage (AC) per Anode UX-280	A. C.	89 and GND 90 and GND	345	Measured with a high reading A. C. Voltmeter. Cannot be read on Weston Model 528 A. C. Voltmeter without a multiplier*
Grid Voltage 1st and 2nd Radio Amplifier	D. C.	6 and 11 21 and 25	2–3	Measured on 50 volt scale of Weston Model 489 D. C. Voltmeter.* Varies with different tubes. Measured with "Volume Control" all "On"
Grid Voltage 3rd Radio Amplifier	D. C.	31 and 35	1.5–2	Measured on 50 volt scale of Weston Model 489 D. C. Voltmeter.* Varies with different tubes
Grid Voltage Detector	D. C.	44 and 47	28	Measured on 250 volt scale of Weston Model 489 D. C. Voltmeter.* Varies with different tubes
Grid Voltage Audio Amplifier	D. C.	57 and 60	46	Measured on 250 volt scale of Weston Model 489 D. C. Voltmeter.* Varies with different tubes
Screen Voltage Radio Amplifiers	D. C.	9 and 11 24 and 25 34 and 35	60–65	Measured on 250 volt scale of Weston Model 489 D. C. Voltmeter*
"B" Voltage Detector	D. C.	47 and 55	245	Preferably measured on Weston Model 489 D. C. Voltmeter with 750 volt scale or 250 volt scale with multiplier*
"B" Voltage Audio Amplifier	D. C.	60 and 69	260	Preferably measured on Weston Model 489 D. C. Voltmeter with 750 volt scale or 250 volt scale with multiplier*
"C" Voltage Audio Amplifier	D. C.	63 and 64	47	Measured on 50 volt scale of Weston Model 489 D. C. Voltmeter*
Total "B" Voltage	D. C.	64 and 101	310	Measured on Weston Model 489 with 750 volt scale or 250 volt scale with multiplier*
Dynamic Field Voltage	D. C.	78 and 112	330	Measured on Weston Model 489 with 750 volt scale or 250 volt scale with multiplier*

*Or other instrument of similar design and quality.



LEFT—Schematic Circuit of Phonograph Equipment of No. 654 Radio-Phonograph

BELOW—Wiring Diagram of Phonograph Equipment of No. 654 Radio-Phonograph



The following is a list of replacement parts for the Stromberg-Carlson Nos. 641–642–652–654 Receivers. The piece numbers of the various parts appear on the complete wiring diagram

Piece Number	*Name of Part*	*Required per Receiver*
P-18730	Binding Post Assembly, Antenna and Ground	1
P-18694	Bracket Assembly, Pilot Lamp	1
P-18691	Bracket Assembly (Voltage Divider)	2
P-18808	Bracket, Bottom Shield	1
P-18796	Bracket, Grid Capacitor	1
P-18646	Bracket (Rear Volume Control Potentiometer Mtg.)	1
P-18026	Bushing, Power Supply Cord	1
P-18937	Cap (For Aligning Capacitor Opening)	4
P-18849	Capacitor, Aligning (Detector Stage)	1
P-18867	Capacitor, Aligning (R. F. and Antenna Stage)	3
*P-18834	Capacitor Assembly	1
P-18799	Capacitor Assembly, Filter	1
P-18814	Capacitor Assembly, Radio By-Pass	3
P-18671	Capacitor, Grid (0.00025 mfd.)	1
*P-18833	Clamp, Mounting (For P-18834 Capacitor)	1
P-18655	Clip, Mounting (R. F. Coil Assembly)	4
P-18757	Coil, Dynamic Speaker Field	1
P-18658	Coil Assembly, Antenna	1
P-18659	Coil Assembly, R. F.	3
P-18746	Cone and Moving Coil Assembly (For P-18870 Dynamic Speaker)	1
P-16399	Cord, Power Supply (Field of P-18870 and P-18871 Dynamic Speaker)	1
P-18047	Cord, Power Supply (Receiver Chassis)	1
P-18873	Cord, Speech Input (For P-18870 and P-18871 Dynamic Speaker Assemblies)	1
P-18720	Cover Assembly (For Radio Tubes)	1
P-18712	Cover, HI-LO Switch	1
P-18674	Cover, Tuning Capacitor	1
P-18430	Coupling Assembly, Volume Control	1
P-18844	Dial, Station Selector	1
P-18645	Drive Assembly, Variable Tuning Capacitor	1
P-18820	Filter Assembly, Detector Plate	1
P-18802	Grid Clip (For UY-224 Tubes)	3
P-18642	Inductor Assembly, Filter	1
P-18417	Jack, Phonograph	1
P-18651	Jack, Pin (Loud Speaker)	1
P-18429	Knob, Station Selector (Moulded)	1
P-18405	Knob, Volume Control and ON-OFF Switch (Moulded)	2
P-18167	Nut (For P-18026)	1
P-15961	Nut (For P-18417 Jack)	1
P-18810	Lamp, Dial (2.5 Volt Filament)	1
P-19348	Motor, Phonograph, 60 cycles (No. 654-A Receiver)	1
P-19349	Motor, Phonograph, 50 cycles (No. 654-BB Receiver)	1
P-19350	Motor, Phonograph, 25 cycles (No. 654-B Receiver)	1
P-18956	Pickup Head	1
List 3027	Plug, for Pickup Cord	1
P-19260	Potentiometer, Phonograph Volume Control	1
P–21692	Potentiometer, Volume Control (Front)	1
P–21693	Potentiometer, Volume Control (Rear)	1
P-18415	Receptacle (For Speaker Power Supply)	1

Piece Number	Name of Part	Required per Receiver
P-18817	Resistor, Midtap (10 ohms)	1
P-18831	Resistor (170 ohms, Two Terminals)	1
P-18633	Resistor, 390 ohms (Yellow)	1
P-18696	Resistor, 10,000 ohms (Blue)	1
P-18704	Resistor, 15,000 ohms (Dark Gray)	1
P-18670	Resistor, 2 Megohm (Green)	1
P-18672	Resistor, Voltage Divider (11,000 ohms, Three Terminals) . .	1
P-18673	Resistor, Voltage Divider (9,750 ohms, Five Terminals) . . .	1
List 3018	Screws, No. 4 x 1/4" R. H. I. Sheet Metal Nickeled	4
List 3019	Screws, No. 6 x 3/8" R. H. I. Sheet Metal Nickeled	29
P-18801	Shield, Bottom (Under Radio Amplifier)	2
P-18552	Shield, R. F. Coil	4
P-18578	Socket, Tube—UX	2
P-18577	Socket, Tube—UY	4
P-18870	Speaker Assembly, Dynamic (Rectangular Field)	1
P-18902	Spring, Contact (Variable Gang Capacitor)	3
P-17737	Switch, HI-LO	1
P-18597	Switch, ON-OFF	1
P-18669	Switch, Pickup	1
P-18786	Transformer Assembly, Output	1
P-18624	Transformer, Audio	1
P-18957	Transformer, Pickup	1*
P-18698	Transformer, Power (60 Cycle)	1
†P-18699	Transformer, Power (25 Cycle)	1
‡P-18700	Transformer, Power (220 Volts)	1
P-19281	Tone Arm, Less Pickup Head (No. 654 Receiver)	1

*Used in Nos. 652-B, 652-C, 654-B, 654-BB, and 654-C Receivers.
†Used in Nos. 652-B, 654-B and 654-BB Receivers.
‡Used in Nos. 652-C and 654-C Receivers.

Supplementary Engineering Data Book

for

Stromberg-Carlson No. 641 Radio Receiver for A.C. Operation

to be used with

Engineering Data Book

for

No. 642 Art Console

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY
Kansas City, Missouri Rochester, New York Chicago, Illinois
United States of America

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY
OF CANADA, LTD.
Toronto, Ontario, Dominion of Canada

STROMBERG-CARLSON (AUSTRALASIA) LIMITED
Sydney, New South Wales, Australia

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The Stromberg-Carlson No. 641 Radio Receiver

The No. 641 Radio Receiver is a Treasure Chest type equipped for use with an external loud speaker. The chassis is exactly the same as that of the No. 642 Art Console with the exceptions of certain wiring differences in the audio output circuit, the "B" rectifier circuit, and the power circuit. These differences are shown by the wiring diagrams and schematic circuit included in this folder. With these exceptions the Engineering Data Book for the No. 642 Art Console may be used in maintenance work on No. 641 Receivers.

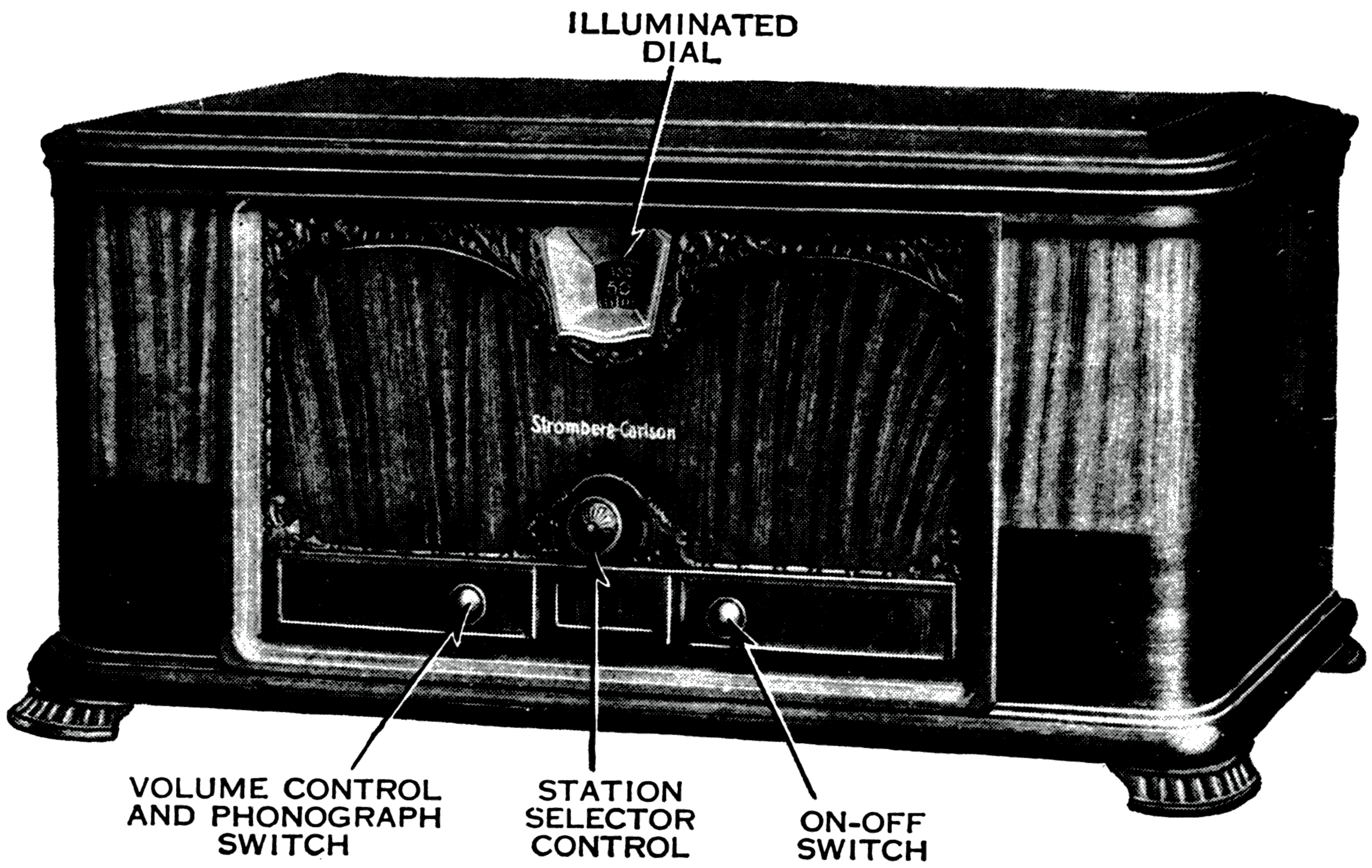


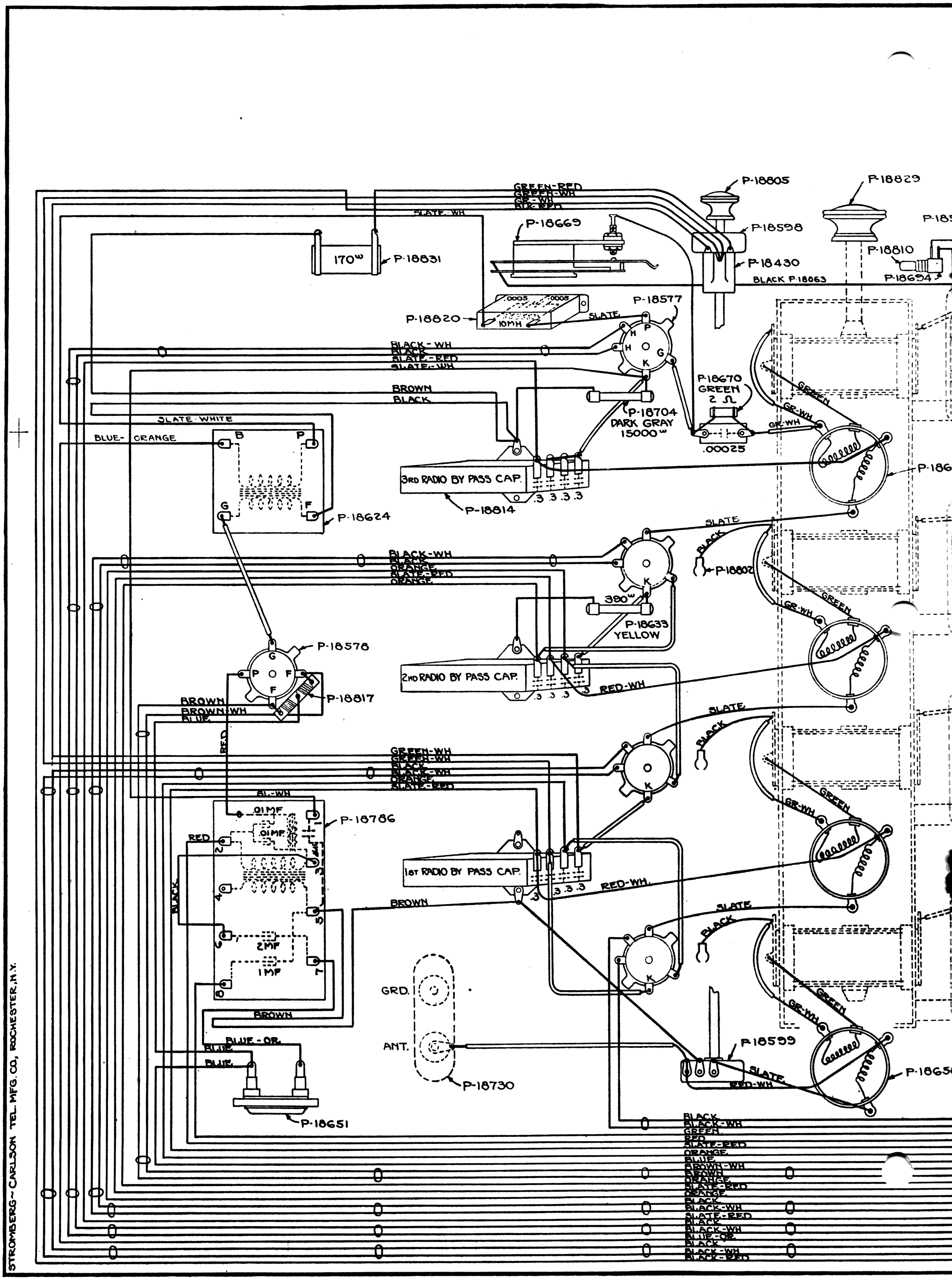
Fig. 1. Front View of No. 641 Radio Receiver Showing Controls.

The cabinet of the No. 641 Receiver is composed of three elements, securely fastened together by four long tie bolts. There is a substantial framed-up wooden base, with all visible portions of walnut, to which the chassis is securely fastened. The body of the cabinet is of special Haskelite laminated and formed wood with an embossed Haskelite wood control panel. This Haskelite wood is the same substantial construction as used in high grade automobile tops and in airplane fuselages. The embossing on the front panel is designed to represent finely executed hand carving. The external surface is selected walnut veneers, arranged with the wood grains in different directions to simulate panel work. The lid of the cabinet is built up with a solid walnut frame and panel with four piece center matched figured walnut top.

A removable panel is provided on the cabinet bottom to allow ready access to the apparatus and wiring on the under side of chassis base without dismantling the cabinet. (See Figs. 2 and 3.)

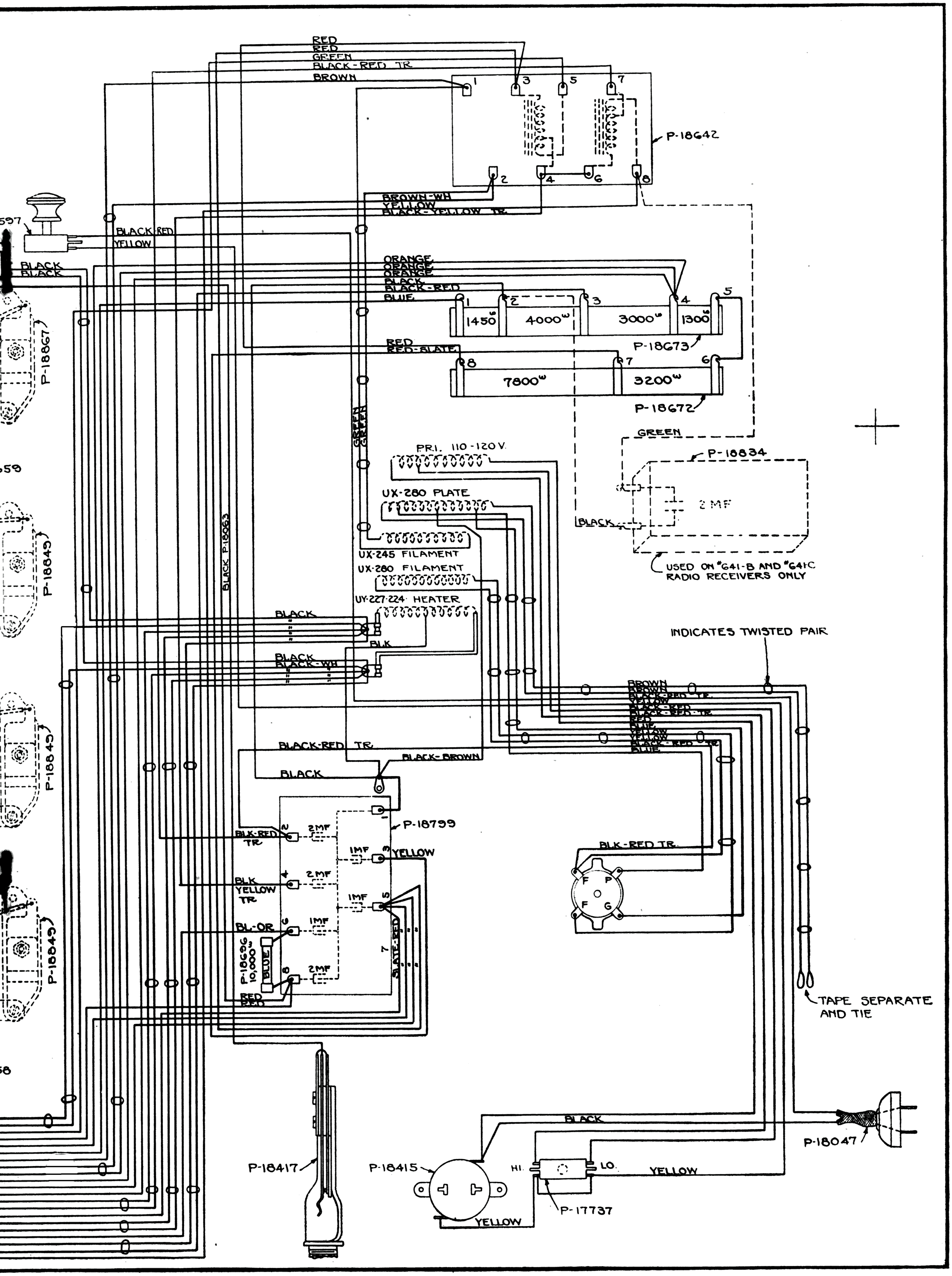
Four ornamental die-cast feet are provided on the base of this cabinet and felt covered gliders are attached to these feet for protecting table tops.

Wiring Diagram—No. 64



Change Note—The leads from the dial lamp should be shown connected to t

...1 Radio Receiver Chassis



...the heater terminals of first radio tube instead of to the power transformer.

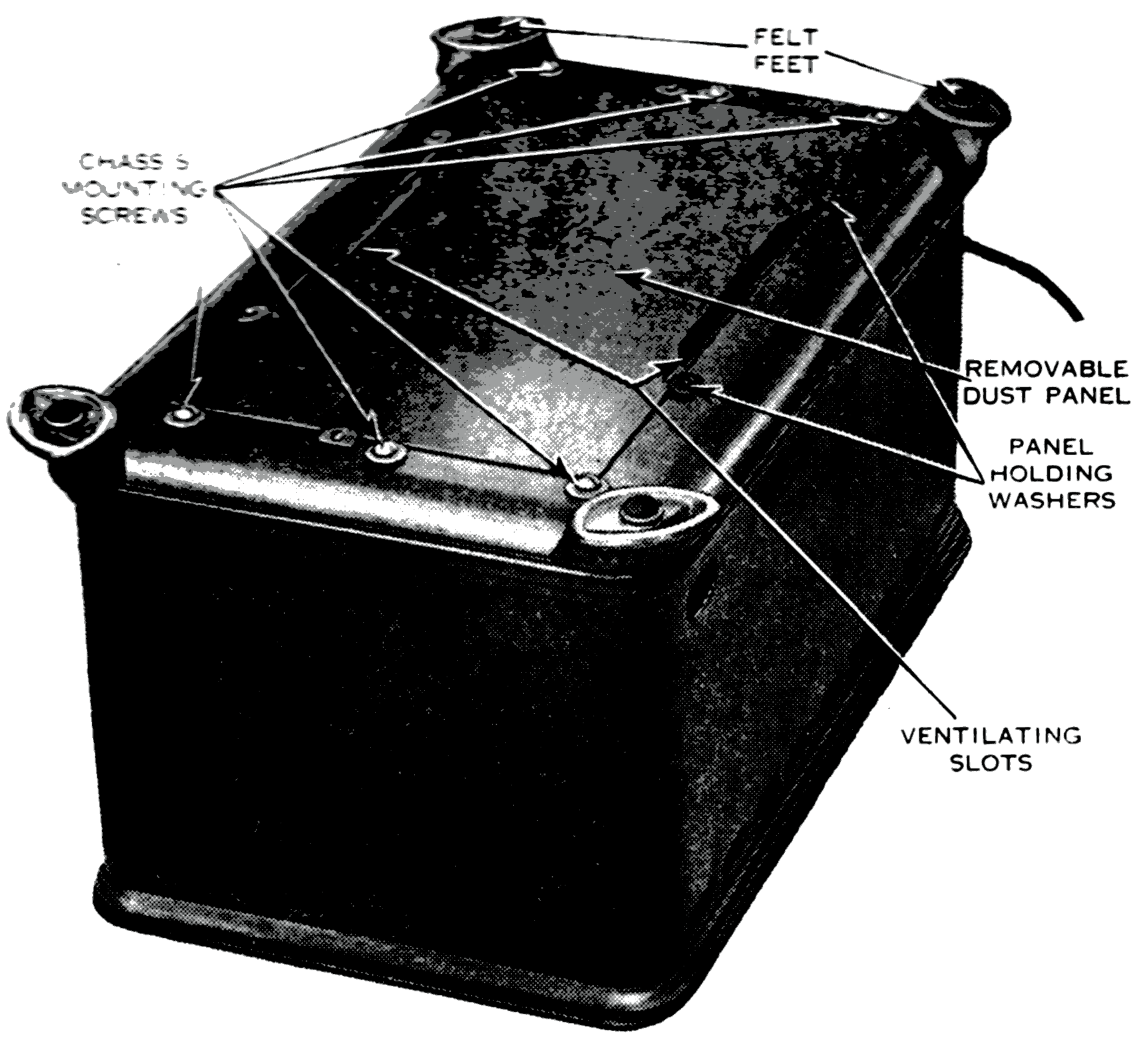


Fig. 2. Bottom of No. 641 Radio Receiver Before Dust Panel is Removed

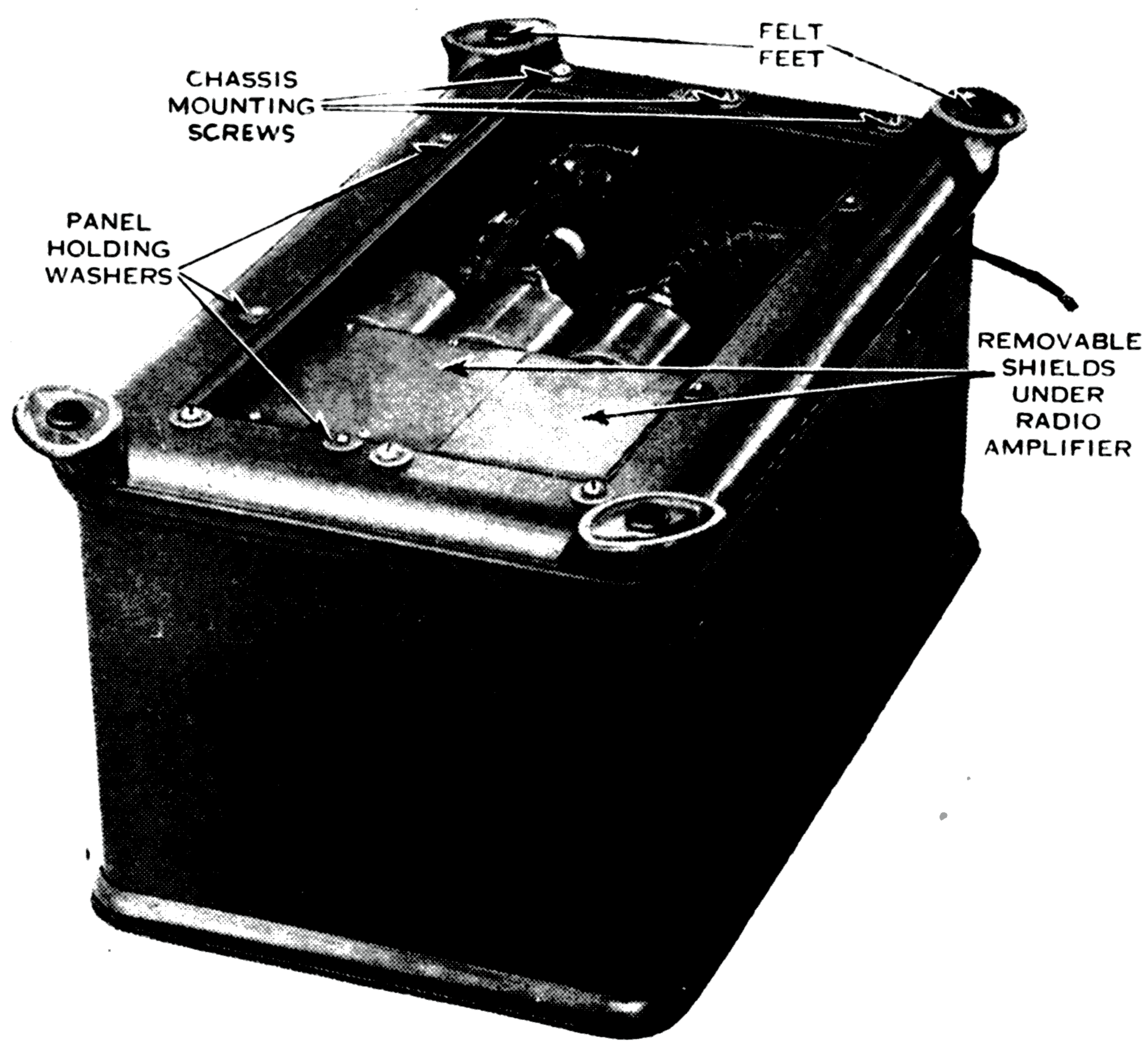


Fig. 3. Bottom of No. 641 Radio Receiver After Removal of Dust Panel.

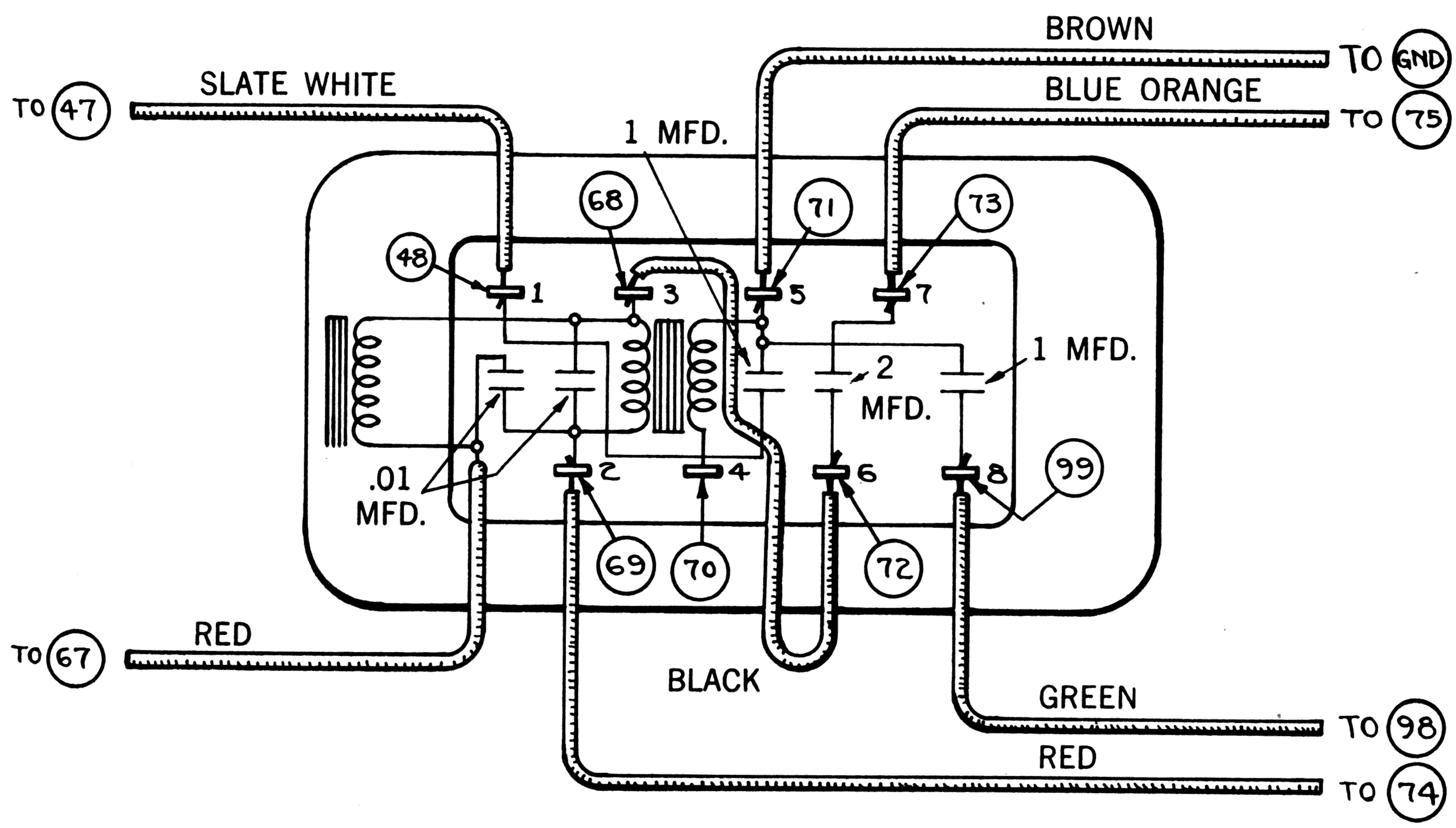


Fig. 4. Detail of P-18786 Output Transformer Assembly used in No. 641 Radio Receiver.

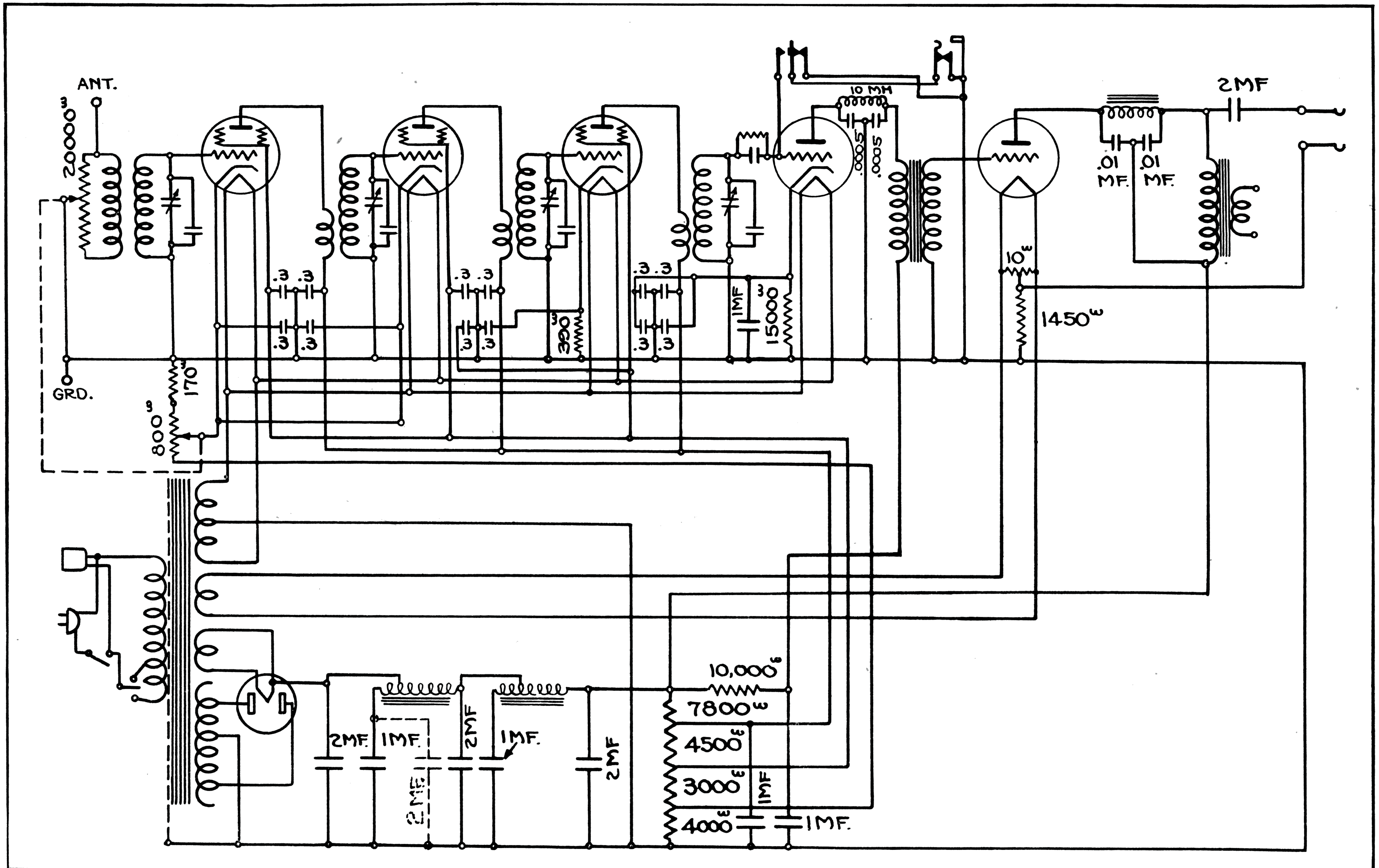


Fig. 5. Complete Schematic Circuit of Chassis of No. 641 Radio Receiver. The differences in circuit between the No. 641 and the No. 642 may be noted by comparing this schematic with that on Page 14 of the Engineering Data Book for the No. 642 Art Console.