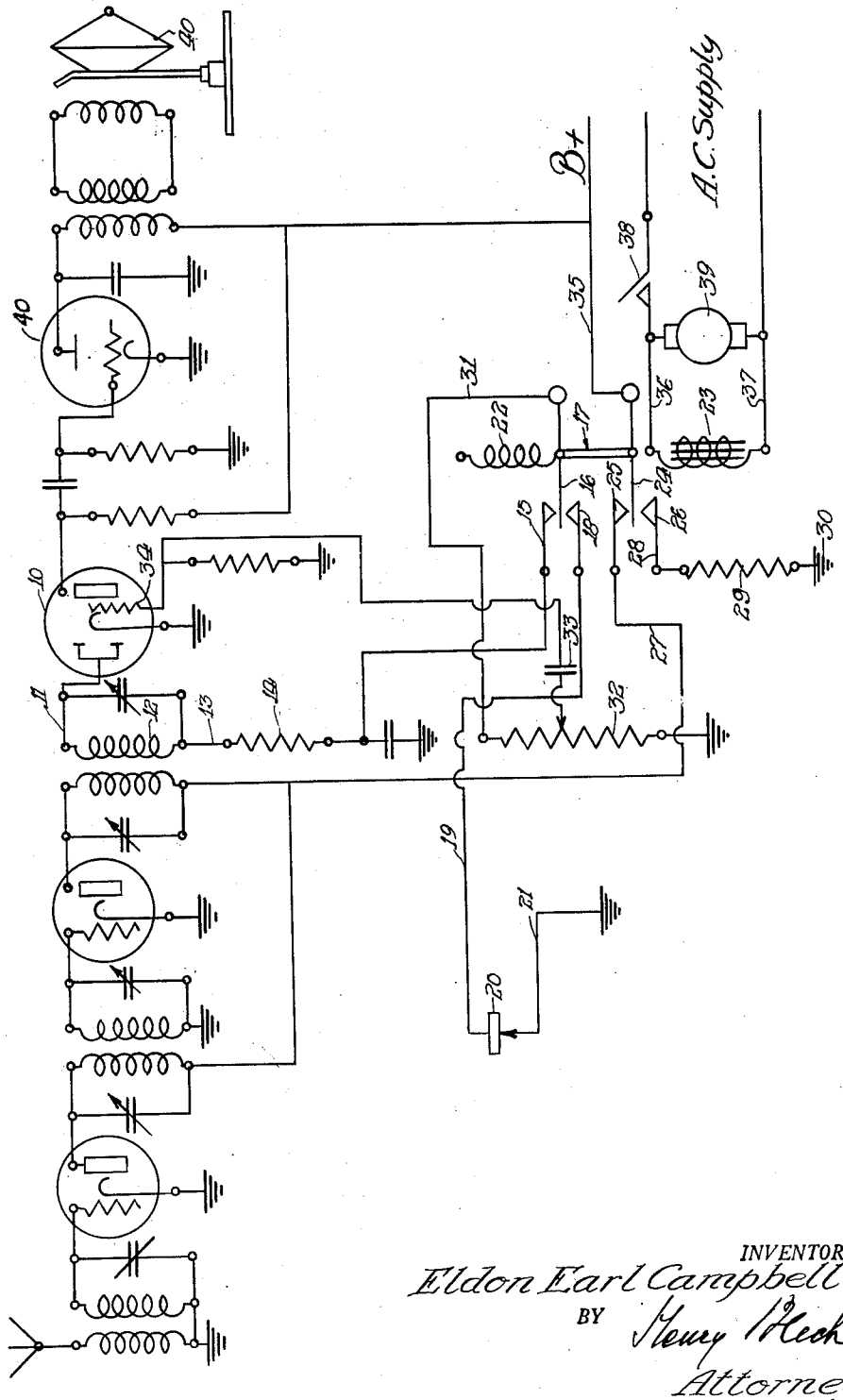
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RADIO-PHONOGRAPH COMBINATION

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RADIO-PHONOGRAPH COMBINATION

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1 Claim. (Cl. 179—100.11)

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The invention broadly relates to sound reproducing apparatus and particularly to radio and phonograph combination sets where the phonograph starting switch is automatically opened at the end of the record playing.

In the conventional combination radio and phonograph set it is necessary to turn a knob for changing from radio to phonograph and subsequently the starting switch must be closed. In changing from phonograph to radio again a knob on the face board must be turned and subsequently the starting switch must be opened.

It is, therefore, an object of the invention to provide a set which automatically changes from phonograph to radio and vice versa.

It is a further object to provide a combination set wherein the change from phonograph to radio is automatically effected upon cessation of the record playing.

A still further object constitutes the provision of a set wherein upon closing the starting switch of the phonograph the radio circuit is disassociated from the amplifying and reproducing equipment and upon opening of the starting switch the phonograph is disassociated from said equipment.

It is a further object to provide means for interrupting the plate current of the radio frequency tubes upon operation of the phonograph so that the life of the radio frequency tubes is lengthened.

It is a still further object to constantly heat the filaments even though the plate current of the radio frequency tubes is interrupted so that the radio is in instant operation when switching from phonograph to radio.

With these and other important objects in view which will become apparent from the disclosure of the invention, the latter comprises the means described in the following specification particularly pointed out in the claim forming a part thereof and illustrated in the accompanying drawing, which is a fundamental diagram of a radio circuit showing the mechanism for automatically changing over from radio to phonograph and vice versa.

In describing the invention only those parts are referred to which are necessary for an understanding of the invention.

The demodulator or detector tube 10 is connected by a wire 11 to the secondary 12 of the last radio frequency transformer whence a wire 13 leads to a resistor 14 and then to a contact 15 adapted to be engaged by the blade 16 of a double throw switch. The other contact 18 is

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connected by a wire 19 to the phonograph tone arm 20 and a wire 21 leading therefrom is grounded to complete the circuit.

The double throw switch 17 is connected to a pull spring 22 on one side and is controlled by an electro-magnet coil 23.

The second switch blade 24 is adapted to selectively engage the contacts 25 and 26.

A wire 27 leads from contact 25 to all high voltage taps preceding the second detector stage.

A wire 28 is connected to a resistor 29 which is grounded as at 30.

This resister is for the sole purpose of maintaining constant voltage on output tube 40 regardless of whether tonearm circuit or radio circuit is operated.

The blade 16 is connected by a wire 31 to the resistor 32 of the volume control mechanism. A blocking condenser 33 is connected to the resistor 32 and to the grid 34 of the sound detector.

The switch blade 24 is connected by a wire 35 to the high voltage plate supply as at B.

The electromagnetic coil 23 is connected by wires 36 and 37 to the A. C. supply of 110 volts, 60 cycles.

A starting and stopping switch 38 is in series with the coil 23 and a motor 39 is connected in parallel with the relay circuit.

The switch 38 automatically opens at the end of the record playing, as is now incorporated in numerous record changers on the market.

In operation upon closing the starting switch 38 the circuit through the motor 39 is closed and simultaneously the relay 23 is energized and the spring tension overcome closing the switch 17 with contacts 18 and 26. The switch 17 closes then the circuit through the tone arm 20 and the resistor 29 which is designed to dissipate the exact amount of current used by the radio circuit preceding the demodulator or detector.

Due to the resistor 29 the high voltage is retained at the same level as when the radio is playing.

This is necessary because when the switch blade leaves contact 25 high voltage is removed from all tubes of radio not actually in use for record playing and the same amount of current is consumed by the resistor 29 as is necessary for the radio tubes which are taken out upon energizing the electro-magnetic coil or relay 23.

The tone arm 20 is also connected through volume control to the audio amplifying system of the radio circuit following the second detector up to the loud speaker.

The life of the radio frequency tube is length-

ened because during the playing of the phonograph these tubes are not conducting current since the plate voltage is removed.

The filaments, however, are constantly heated so that upon changing over from phonograph to radio the latter is instantly in operation since no time lapse is necessary for the normal heating period of the filament.

When the last record is played the phonograph automatically stops and simultaneously the starting switch is automatically opened as is well known by those versed in the art.

Upon the opening of the starting switch **38** the motor **39** and the coil **23** are de-energized. Thereupon the spring **22** causes the switch to engage contacts **15, 25,** cutting out the resistor **29** and returning high voltage to the radio circuit section preceding the audio stages.

I claim:

In a combination radio-phonograph apparatus of the known type including at least an audio amplifying section, a radio frequency section, a demodulating section, a source of plate potential, a phonograph tone arm, and a phonograph motor and a starting switch therefor, improvements comprising, to wit: a relay having its

winding shunted across the terminals of said motor for energization when said motor is running, normal contacts on said relay and closed when the latter is deenergized to complete an operating circuit between said demodulating and audio amplifying sections, and to connect said radio frequency section to a source of plate potential, said relay having contacts closed upon energization to connect said audio amplifying section to said tone arm and to connect a standby load to said source of plate potential.

ELDON EARL CAMPBELL.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,768,658	Balsley	July 1, 1930
1,768,661	Brindley	July 1, 1930
1,811,856	Long	June 30, 1931
1,852,877	Gardner	Apr. 5, 1932
1,852,878	Gardner	Apr. 5, 1932
1,969,344	Andrews	Aug. 7, 1934
2,405,526	Sinnett	Aug. 6, 1946