

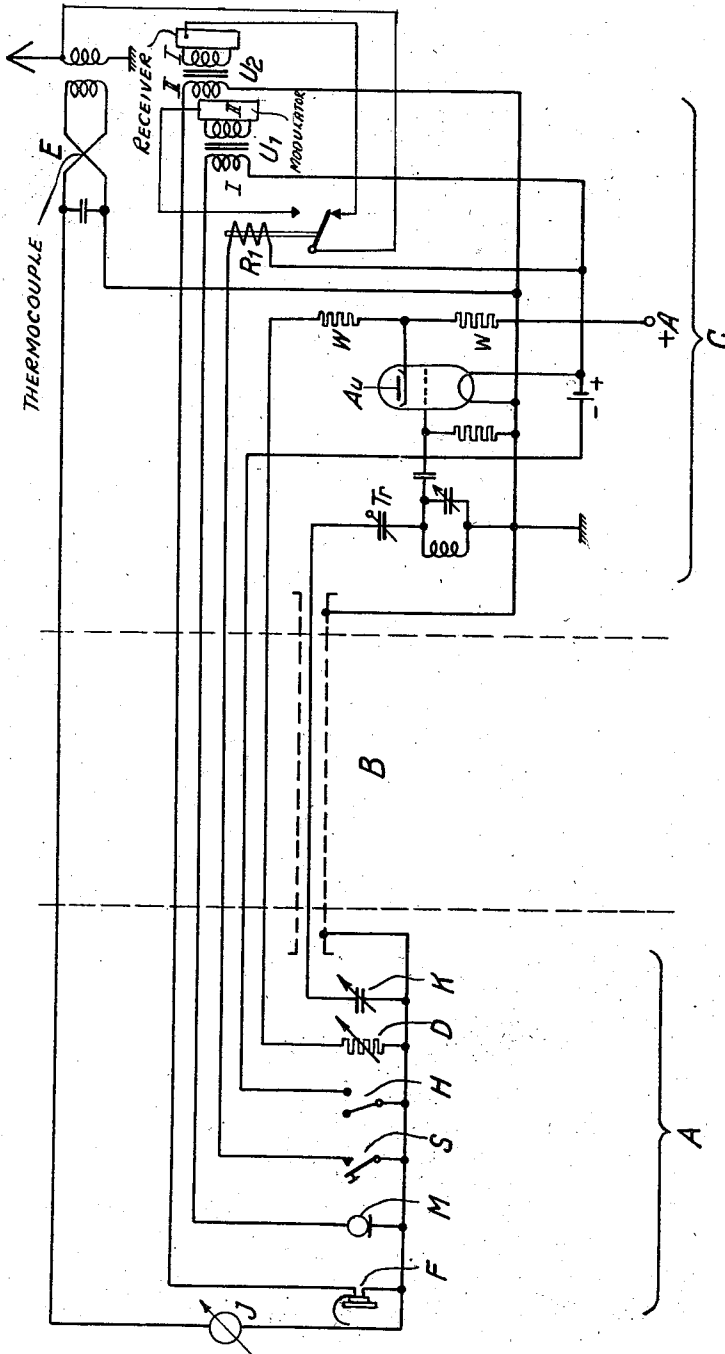
March 10, 1942.

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2,276,122

PORTABLE RADIO SET

Filed July 29, 1939



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# UNITED STATES PATENT OFFICE

2,276,122

## PORTABLE RADIO SET

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Application July 29, 1939, Serial No. 287,190  
In Germany August 4, 1938

2 Claims. (Cl. 250—13)

Portable transmitting and receiving radio apparatus for use on the march is usually arranged so that tuning and switching equipment is carried on one's back in a knapsack.

The disclosed invention proposes, for the simplification of such apparatus, that the control equipment be disposed in a special box which requires little space and which, for example, might be carried in the operator's pocket near the belt. The connection from the control box to the knapsack radio set accordingly consists of a short multi-circuit cable, which is plugged into the knapsack set. In order to make the number of lines in the connecting cable as small as possible, the invention proposes that all terminations and control devices be designed to have a common reference potential, which, for example, equals the cathode potential.

My invention will be more readily understood when considered in conjunction with the following description and drawing, which shows a possible application of the material constituting the invention.

The elements A of the set are assembled in a small control box which is connected to the knapsack radio equipment C, of which only a part of the circuit is shown, by the multi-circuit cable B.

Referring to the essential elements in more detail, a telephone receiver F' connected to output transformer U2, a microphone M connected to input transformer U1, and a telegraph key S, and a relay R1 operated by microphone M or key S are inserted or removed from circuit by the main control switch H. Relay R1 thus serves to connect the transmitter with the antenna during transmitting periods and the receiver to the antenna when no transmission is taking place.

The variable high resistance D is provided to control feedback and is of special small construction. In cooperation with two more resistances W in series inside the knapsack equipment, it varies the screen grid voltage of the audion tube Au, and accordingly effects regulation of the feedback.

The fine tuning of the receiver is accomplished with a variable condenser K of the smallest possible size, and the terminal capacitance of which approximately matches the self-capacity of the line in the combination cable B. A combined capacity, which may be much too great for a second tuning of the receiver circuit, arises from the parallel connection of the variable condenser and the capacity of the cable B.

It is therefore proposed that for later tuning

of the oscillator circuit a trimming condenser Tr be employed. The combined capacity is thereby through a series connection reduced to an allowable value. The scope of control is, however, by no means decreased.

With this series connection great capacitances, such as occur in long high-frequency cables, can be compensated for, as long as the variable element has been chosen great enough to offset the combined capacity arising from the said parallel connection. Another further possibility is evident, that is, the use of the invention in radio sets for long-distance operation (for example, inside buildings).

Furthermore, the invention may be adapted to supervise antenna radiation in that a circuit may be coupled to the antenna by a thermo-couple E which is alternately coupled to cathode potential and to a variable inductive indicator J, disposed in the control box.

What is claimed is:

1. A radio set arranged for remote control comprising a first compartment containing the principal components of the set including a tube having at least a cathode, a control grid and an anode and including an oscillatory circuit connected between said control grid and cathode, a second compartment containing electrical control elements for said set including a variable condenser for tuning said oscillatory circuit, a multi-conductor electric cable interconnecting said control elements and said components, a common connection over said multi-conductor cable from one side of said variable condenser and one side of each of the other control elements to a reference point of stable potential in said first compartment, a trimming condenser in said first compartment, a connection from one side of said trimming condenser to said oscillatory circuit, a connection from the other side of said trimming condenser to one end of one of the conductors of said multi-electrode cable, and a connection from the other end of said conductor to the other side of said variable condenser.

2. A radio set according to claim 1, further comprising an antenna, a thermo-couple coupled to said antenna, an indicating instrument in said second compartment, a connection from one branch of said thermo-couple to said reference point of stable potential and a connection from the other branch of said thermo-couple over a conductor of said multi-conductor cable to said indicating instrument.

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