

A Screen Grid Detector Two



THE advent of the screen grid valve has revolutionised radio reception where distance and volume are the main considerations in a receiver. As radio frequency amplifiers they are far in advance of anything tried previously because their internal capacity is almost non-existent, and so there is no trouble with self-oscillation.

As audio frequency amplifiers, they give wonderful results, but the introduction of the screen grid audio valve allows new results in audio amplification to be obtained. In fact, one of these valves is equal to an ordinary two-stage audio amplifier.

Circuits using the screen grid valve as a radio frequency amplifier have been published before, but so far very few descriptions of a circuit using one as a detector have been given.

Many experimenters have tried using the new valve as a space charge detector, but their results were very poor, and not up to those obtained with a standard detector.

The circuit to be described in this article does not make use of the space charge system, but aims at reducing the internal capacity of the valve to a minimum while still retaining all the advantages of a standard detector circuit.

An examination of the circuit will show that it is practically a standard Schnell using a special screen grid valve in the audio stage.

It will be seen that in the diagram of the detector valve an extra grid is inserted between the normal grid and the plate. In the actual valve the plate is surrounded by this grid, but for purposes of clarity it is only shown between the grid and plate. This extra grid is connected to the B battery through a radio frequency choke, and

Modern radio receivers are using the screen grid valve as detector, and as several constructors have advised us that they have had great success with this circuit, we publish an article, adapted from an overseas magazine, giving the details of such a circuit. We should like to hear the results of any of our readers who construct this set.

is also connected to the filament circuit through a by-pass condenser.

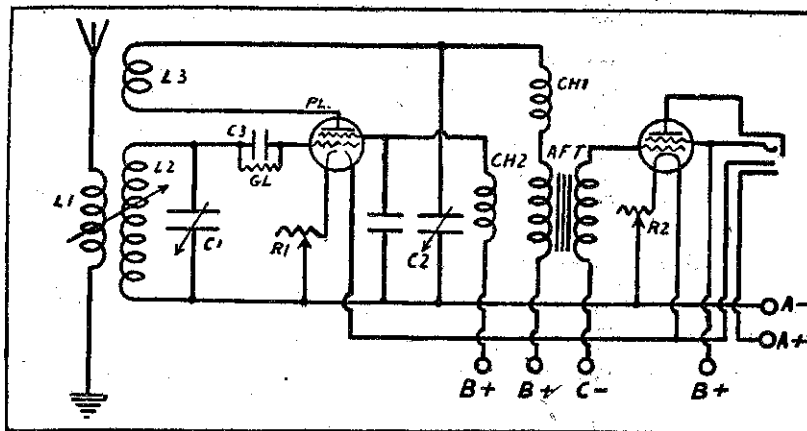
The secret of the success of this circuit is due to the efficiency of the choke used in the screen grid lead.

Due to the effect of the extra grid on the mutual conductance of the

The receiver uses plug-in-coils, so that it can be used for both long and short-wave reception.

The apparatus should be placed exactly as shown in the illustrations if the best results are to be desired.

All the apparatus except the by-



Theoretical Diagram of S.D. Detector 2.

valve, enormous amplification is obtained, and as a result this set is equal to the average four valve receiver.

The Construction of the Receiver.

ONLY the best parts should be employed in a receiver of this type, otherwise the results will not be very good. Therefore, select the best parts that you can obtain.

pass condenser is mounted on the sub-panel, but the condenser is placed below it as this position makes it easier to wire.

The Wiring.

The wiring should be done with bus-bar and sleeving, so that there will be no difficulty with wires crossing. The aerial and earth terminals should be connected to the aerial and earth terminals of the coil kit.

The grid terminal of the kit is then connected to the stationary plates of the tuning condenser, and one terminal of the grid condenser C3, across which is placed the grid lead, GL. The other terminal of the grid condenser connects to the grid terminal of the detector valve socket for the A442 type screen grid valve.

The filament terminal of the coil kit is connected to the rotary plates of the tuning condenser, and to the moveable arm of the detector rheostat and to the rotary plates of the reaction condenser.

It also connects to the arm of the audio amplifier rheostat, and to the A negative battery terminal.

One terminal of the by-pass condenser also joins this connection. The remaining terminal of the detector rheostat to the negative terminal of the detector socket while same is done with the audio rheostat.

The A positive terminal of each socket connect together, and then connected to one of the filament lugs of the jack, the other filament lug of which connects to the A positive battery terminal.

The plate terminal of the detector socket connects to the remaining terminal of the by-pass condenser and to

one side of the r.f. choke CH2. The plate terminal of the valve socket connects by means of a piece of flexible wire to the terminal on the top of the detector valve. Study the instructions with the valve before making the plate and screen grid connections.

The remaining terminal of the r.f. choke CH2 connects to the B positive battery terminal, and afterwards connects to the B45. This is the screen grid connection.

The B terminal of the kit goes to one terminal of the r.f. choke CH1, and to the stationary plates of the reaction condenser. The free terminal of the choke CH1 goes to the P terminal of the audio transformer AFT, while the B terminal of this component connects to another B positive battery terminal.

The G terminal of the transformer goes to the G terminal of the audio frequency transformer, while the C terminal connects to the C negative battery terminal. In the actual receiver such a terminal was not used, but a piece of flex employed.

The plate terminal goes to one of the plate lugs of the jack, while the other connects to the B battery positive terminal, and this connects to the B120. This lug of the jack connects to the terminal on the side of the valve by means of a short length of flex. If an ordinary valve is used in the place of the special one in the amplifier the last connection is omitted.

This completes the wiring of the receiver.

Connecting Up.

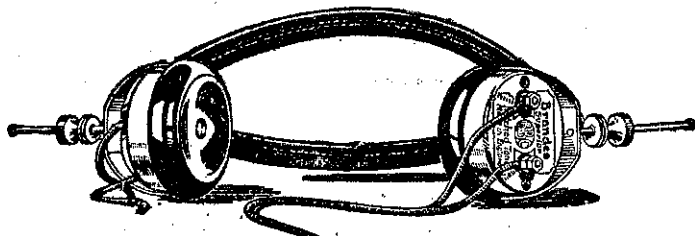
THE A negative battery terminal connects the A battery negative to which are also connected the B negative and the C positive. The detector B positive should go to B negative, the screen grid battery terminal to the B45, and the B amplifier to the B maximum.

Connect up the aerial and earth, the A positive, and insert a pair of phones. Pushing in the phone plug automatically switches on the set while removing it switches the set off.

Insert the coil for the broadcast band and turn on both rheostats. The reac-

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