

## PATENT SPECIFICATION

606,707



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## PROVISIONAL SPECIFICATION

## An Improved Method of and Apparatus for Testing Thermionic Valves

We, SYDNEY RUTHERFORD WILKINS, a British Subject, and THE AUTOMATIC COIL WINDER AND ELECTRICAL EQUIPMENT COMPANY LIMITED, a British Company, both of the Company's address at Winder House, Douglas Street, Westminster, London, S.W.1, do hereby declare the nature of this invention to be as follows:—

10 This invention relates to an improved method of and apparatus for testing thermionic valves.

In our prior Patent No. 480,752 we have described and claimed a method of testing and indicating the mutual conductance of a radio valve which consists in applying the requisite volts to the filament or heater, applying an alternating current to the anode and measuring the change in anode current by a suitable meter after impressing equal and opposite potentials on the grid, said method being characterised in that the voltages applied are related to the meter scale on the basis that, when the meter scale is based on milliamp readings, the R.M.S. value of the alternating voltage applied to the anode is equal substantially to 1.4 times the rated D.C. voltage for the test whilst the equal and opposite grid potentials differ by an amount equal substantially to twice the difference of the normally accepted D.C. grid voltages so that the meter reading indicates a proportion of the actual published mutual conductance figures.

Now such a method is very simple and enables simple and inexpensive apparatus to be provided for efficiently testing the mutual conductance of a valve. It will be appreciated, however, that it is an empirical method and gives only an indication of the mutual conductance of the valve at zero grid volts and the rated anode volts and, whilst at the date of our said

prior Patent such a test was generally recognised as the standard test for the "goodness" of a valve, it has since been appreciated that in many cases such a test does not give a sufficiently accurate indication of the value under working conditions. Also, it is often required to know other things about a valve, for example its anode current at a given grid voltage, and so on. Such readings were not correctly given in the old method. It is, therefore, the chief object of the present invention to provide a method of and apparatus for testing thermionic valves which, whilst retaining all the advantages pointed out in our said prior Patent of applying A.C. voltages, as distinct from D.C. voltages, to the electrodes of the valves, will give readings from which any desired parameter of the valve under test may be produced.

One method of testing a thermionic valve according to the present invention consists in applying a sinusoidal alternating current voltage having an R.M.S. value equal to 1.1 times the normal applied D.C. voltage of the test conditions and applying to the grid an out-of-phase A.C. voltage whose peak value is

equal to  $\frac{1}{.63}$  of the normal applied D.C.

negative grid volts for the conditions in question.

Under these conditions the anode current will be substantially one-half of that which would be passed under D.C. conditions of operation. This relationship, it can be proved, holds good throughout the whole of the valves characteristic performance down to cut-off and including the positive control grid region, and all that is required, therefore,

[Price 1/-]

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