



**HOW TO BUILD A  
TWO VALVE SET**

"No 2"

**The Panel.**

The panel is of ebonite  $\frac{1}{4}$  inch thick and measures 14in. x 7in. It may be bought from any radio store and it would be advisable for those who do not possess suitable drills to have the 10 holes drilled at the shop when making the purchase. The positions of the holes will depend, to a certain extent, upon the components used. The sizes and positions indicated are suitable for the components recommended.

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**GODFREY PHILLIPS**  
CIGARETTES

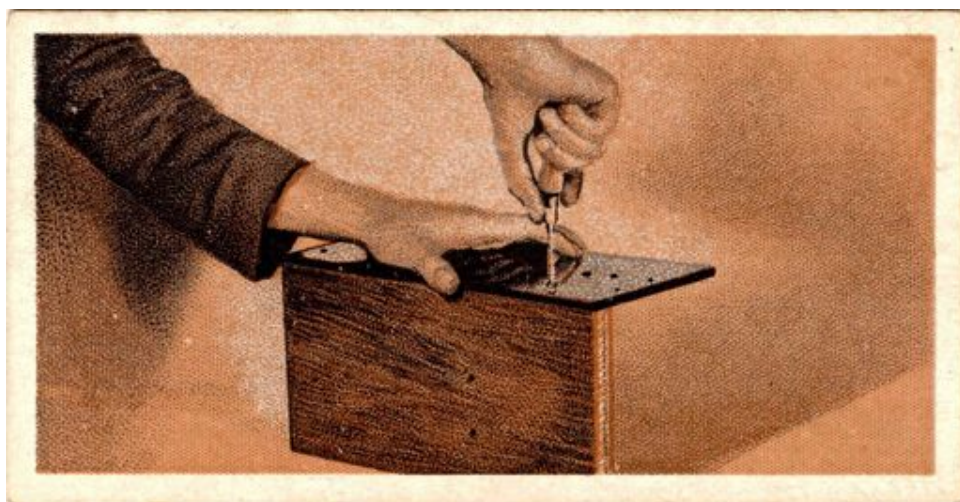
**HOW TO BUILD A  
TWO VALVE SET**

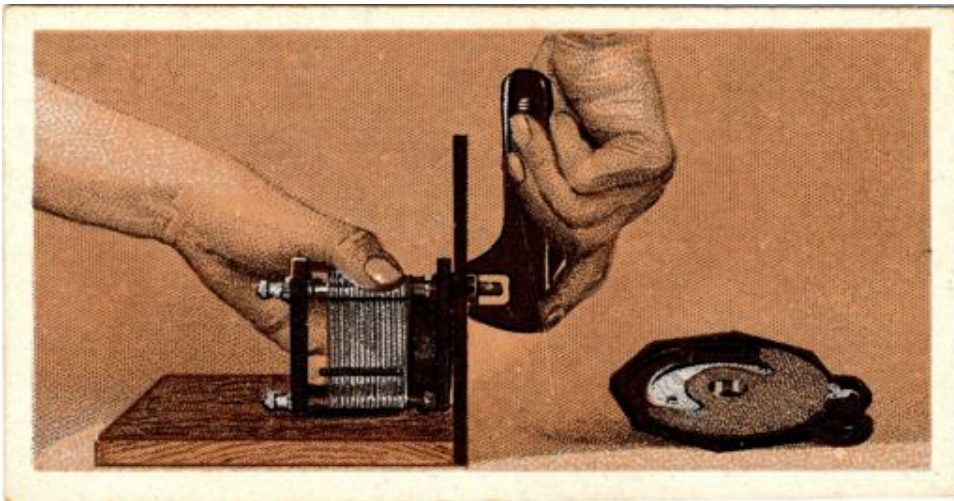
"No 3"

**Screwing Panel to Baseboard.**  
The baseboard is of  $\frac{1}{2}$  inch soft wood and measures 14in. x 7 $\frac{1}{2}$ in. The panel is fixed to the baseboard with two 1in. No. 6 brass or iron countersunk screws, the necessary holes in the panel being countersunk with a rose drill. The screw holes are drilled with a  $\frac{5}{32}$ in. drill  $\frac{1}{4}$  of an inch from the bottom edge of the panel and 2 $\frac{1}{2}$ in. to 3in. from each end.

The panel is then secured as shewn; the operation will be greatly facilitated if the panel is supported on a pile of books or boxes whilst the screws are being inserted.

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## HOW TO BUILD A TWO VALVE SET

"No 4"

### Fixing the Tuning Condenser.

The variable condenser is an "Ormond" .0005 micro farad S.L.F. No. 3 and is fitted into the gin. hole nearest the left of the panel when viewed from the front. The fixing is by the well-known "one hole" method, the instrument being held in place by a single nut, which is secured firmly by means of a suitable spanner. Care must be exercised when handling to avoid bending or damaging the thin vanes.

The slow motion dial is also shewn on the bench.

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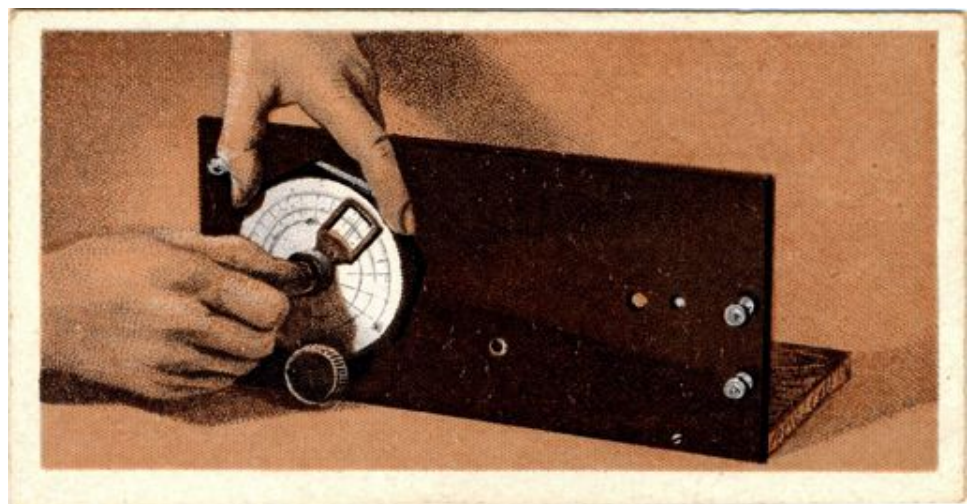
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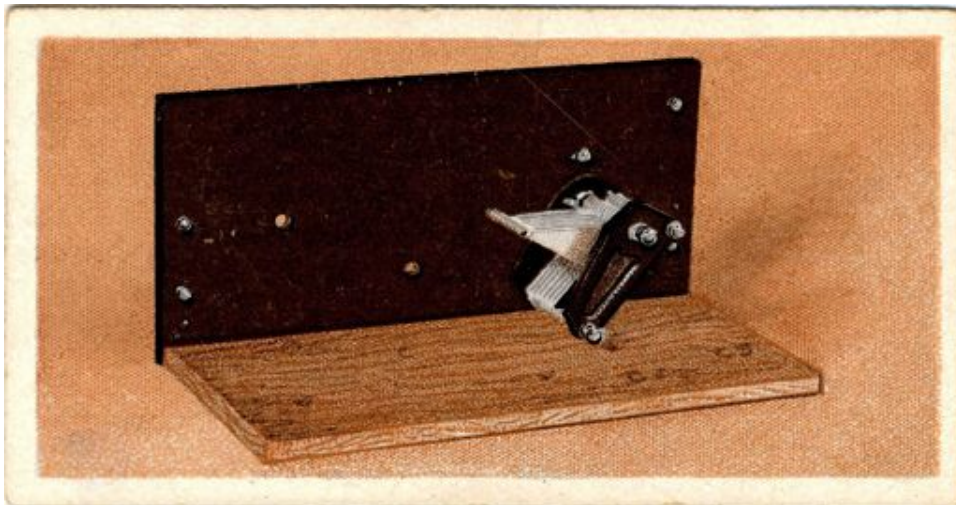
"No 5"

### Fixing Slow Motion Dial.

This picture shews how the "Ormond" slow motion dual indicator dial is fixed. A coin is used to tighten the dial on the condenser spindle. Full printed instructions are issued with the dial when sold.

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## HOW TO BUILD A TWO VALVE SET

"No 6"

### Panel with Condenser Fixed.

This is a view of the baseboard and back of panel with tuning condenser in position. The four terminals also have been fitted. These are standard 4 B.A. Brass W.O. pattern terminals, but may be obtained nickel plated if desired. The two nearest the condenser are (top) aerial and (bottom) earth connections. The remaining two are for headphones or loud speaker.

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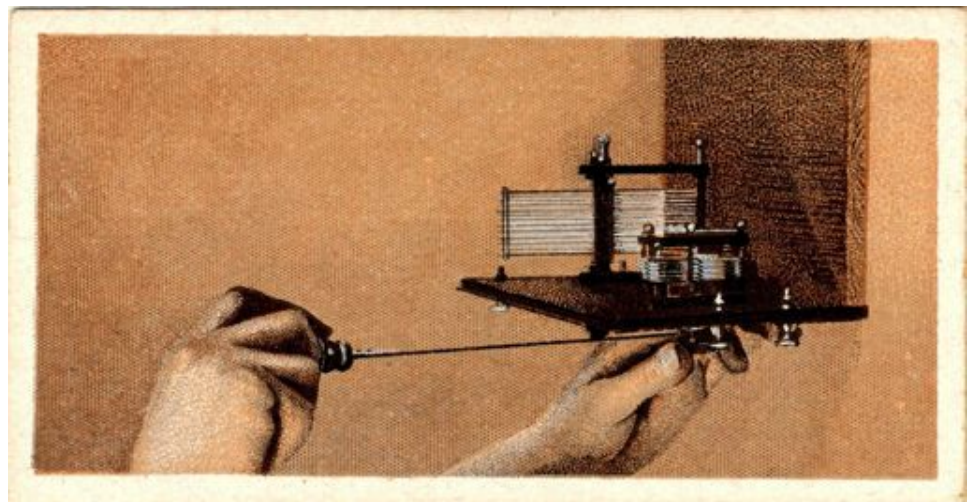
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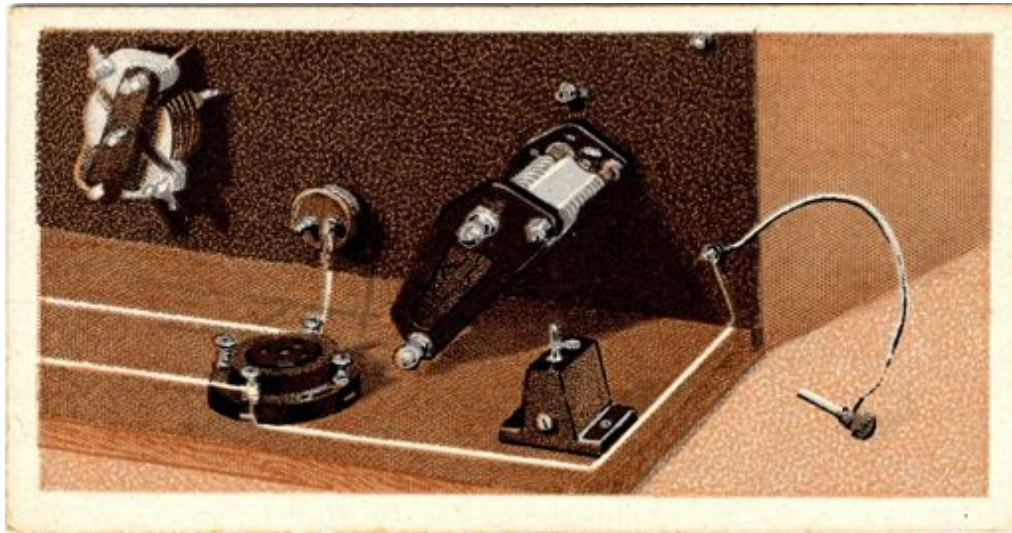
"No 7"

### Fixing Reaction Condenser.

This small variable condenser has a capacity of .0001 micro farad and is made by Messrs. Ormond Ltd. It is fixed in a similar manner to the tuning condenser. The control knob which has a pointer fixed to it is secured on the spindle by a grub screw, which is tightened up as shewn. The instrument has two sets of fixed vanes, these should be connected together with a length of tinned copper wire, as is used to wire up the other components, the two ends being secured under the nuts which hold on the end plate.

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## HOW TO BUILD A TWO VALVE SET

"No 12"

### The Earth Terminal Connections.

A baseboard mounting coil holder is fitted two inches from the back edge and  $\frac{1}{2}$  inch from the end of the baseboard as shewn. The earth (bottom) terminal is then connected to the filament terminal (nearest the back edge of baseboard) on the first valve holder. A 6in. length of insulated flexible wire is also attached to the earth terminal, the other end of this flex is attached to the split connecting plug which is supplied with the centre tapped coil (see card 22).

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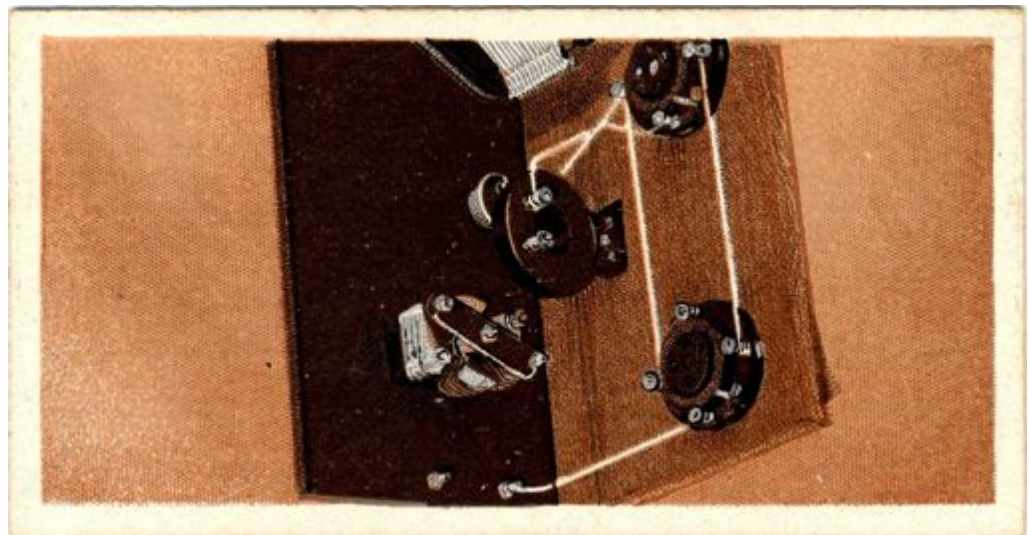
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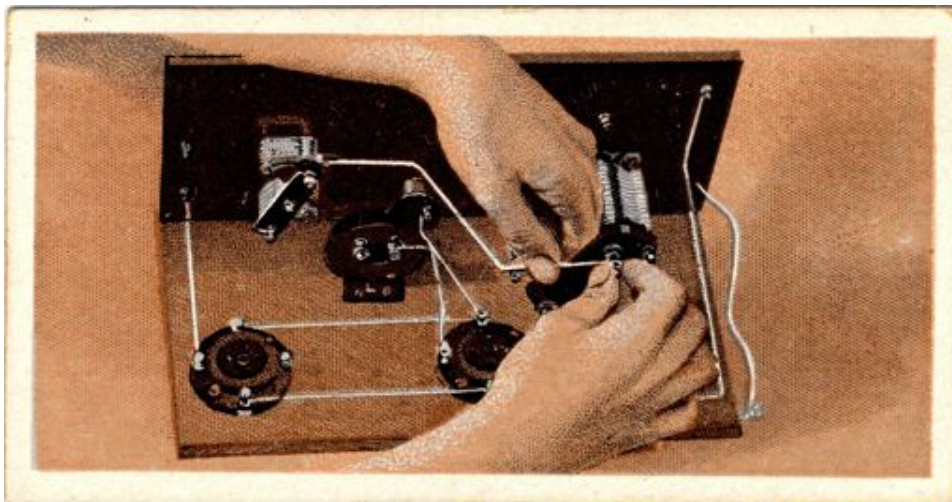
"No 14"

### The Anode Connections.

Here is shewn the high frequency choke ("Igranic") which is fixed to the baseboard as near to the filament rheostat as possible (without touching). One terminal of the H.F. choke is joined to the anode (or plate) terminal of the first valve holder. The anode terminal of second valve holder may now be connected to the lower of the two phone terminals. All terminals should be screwed up tightly.

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## HOW TO BUILD A TWO VALVE SET

"No 15"

### Reaction Condenser Connections.

This picture indicates the connection from the moving (centre) vanes of the reaction condenser, being fixed to the moving vanes of the tuning condenser. Care must be taken to see that this wire is bent to clear the moving vanes of the tuning condenser, as they are moved by rotating the knob on the front of the panel.

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## HOW TO BUILD A TWO VALVE SET

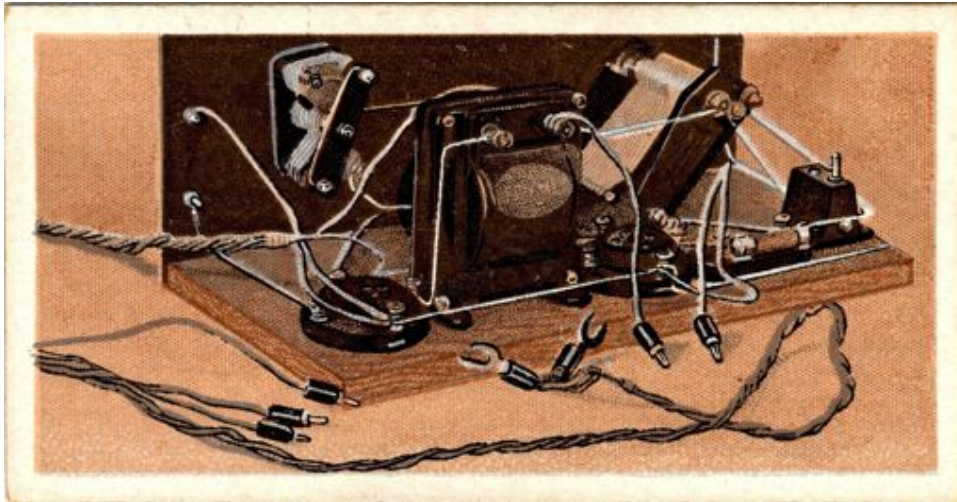
"No 19"

### Battery Connections.

The set is now ready for the High Tension and Low Tension flexible leads to be fixed. A five-way cable may be purchased complete with plugs, but for economy one may be prepared. Obtain a 6ft. length of thick red and black twin flex, and three 3ft. lengths of single flex. These may be of smaller gauge and of different colours to avoid confusion. The colours used in the set described are gold, green and brown. A hole large enough to take the bunch of five wires must be bored through the back of cabinet as shewn on card No.10.

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## HOW TO BUILD A TWO VALVE SET

"No 20"

### Battery Connections (Contd.).

The five wires are now twisted into a cable leaving 8-inch ends loose for connections to the terminals in the set. 4 inches may be cut off the black and brown wires, the bared ends of both these wires are clamped under the filament terminal of the second valve, as shewn in the picture. The three remaining ends are bared and are connected as follows: Red to the spare terminal on the filament rheostat, Green to the +H.T. terminal on the transformer. Gold to the top earphone terminal.

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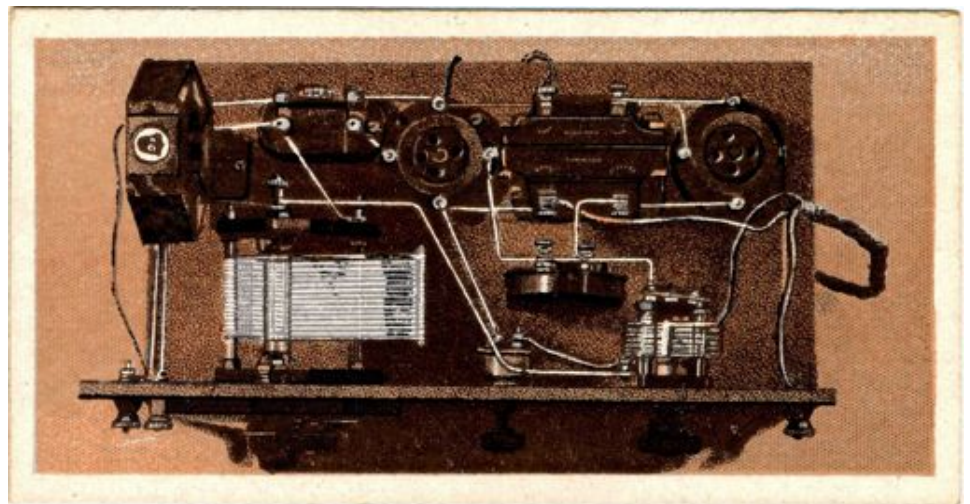
"No 21"

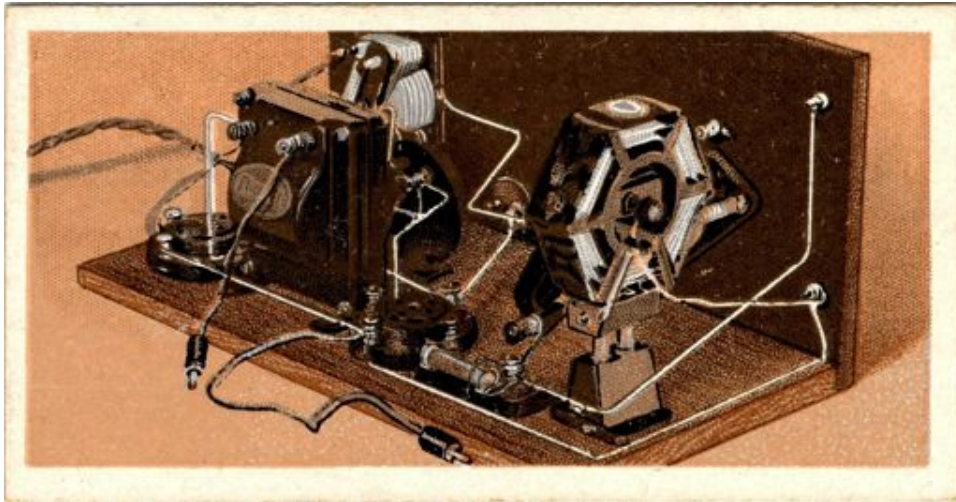
### Battery Connections (Contd.).

The five battery connections are now all fixed to their terminals inside the set. The other end of the 5-way cable is passed through the hole in back of cabinet.

The red and black wires should be terminated with spade terminals of the same colours, and the brown, green and gold leads should have wander plugs attached. Care should be taken to ensure that the ends of the wires make good contact with the plugs and spade terminals. Lisenin Positive Grip plugs and terminals are recommended.

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## HOW TO BUILD A TWO VALVE SET

"No 22"

### The Inductance Coil.

The inductance coil shewn is a No. 60 (Edison-Bell Radio) centre tapped. The plug on the short flexible lead from the earth terminal is plugged into the socket as shewn. With the average aerial the tuning range will include most of the broadcast wave band.

For 5XX and Radio-Paris stations a coil No. 250 will be required. This also must be centre tapped.

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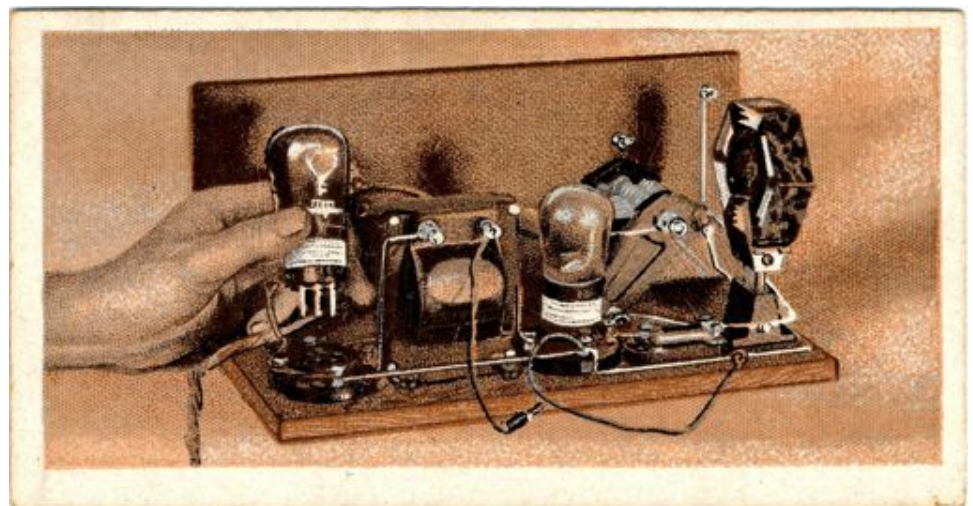
"No 23"

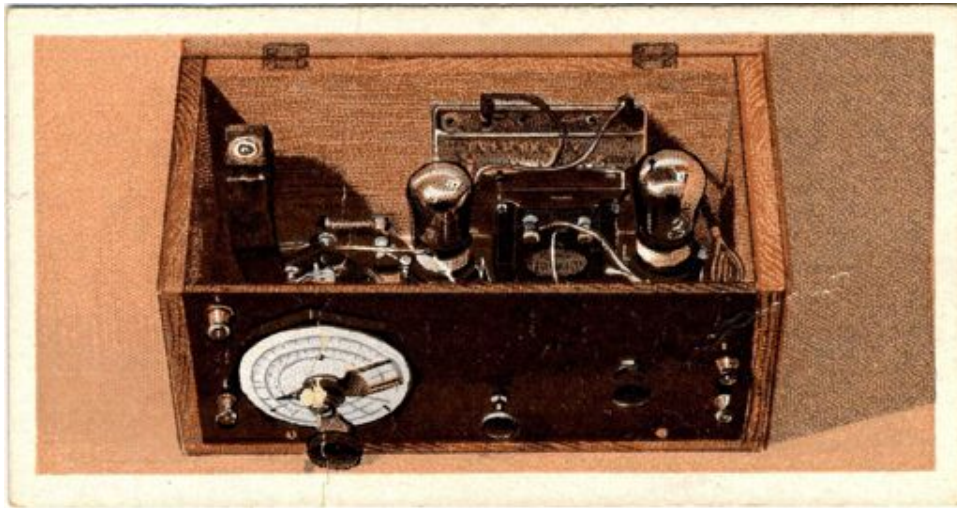
### The Valves.

2-volt Mullard valves are recommended. The first (detector) is a P.M.1. H.F. valve. This is shewn in position. The valve being placed in its holder is the low frequency amplifier and is a P.M.2.

The set is now ready to be slipped into its cabinet and is ready to work when connected to aerial, earth, batteries and headphones.

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## HOW TO BUILD A TWO VALVE SET

N<sup>o</sup> 24

### Connecting Up.

The slack in the battery cable should be pulled through the hole in the cabinet, and the grid bias plugs inserted in the battery which is fixed to the inside of the cabinet. The red plug is pushed firmly into the socket marked + and the black plug in the fourth socket from the + (positive).

The black and red flex will be long enough to reach the floor (on which the 2-volt accumulator usually stands) and the spade terminals are joined to the respective terminals of the accumulator.

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