

WAVEMETER PATTERN 1492B.

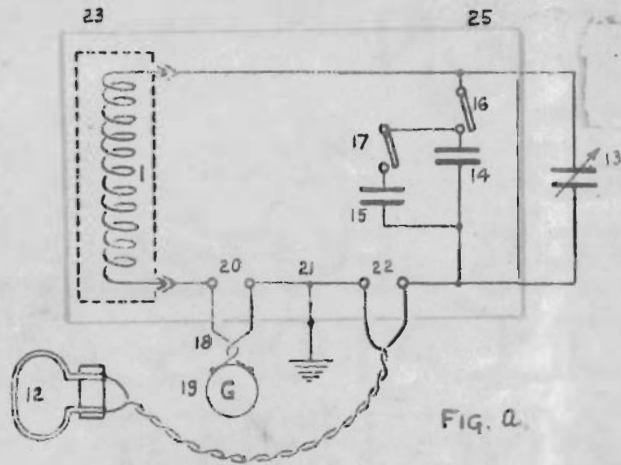


FIG. A.

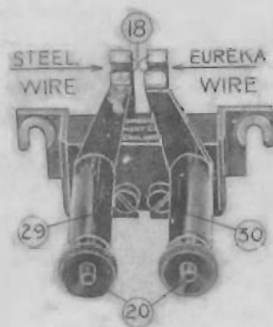


FIG. B.

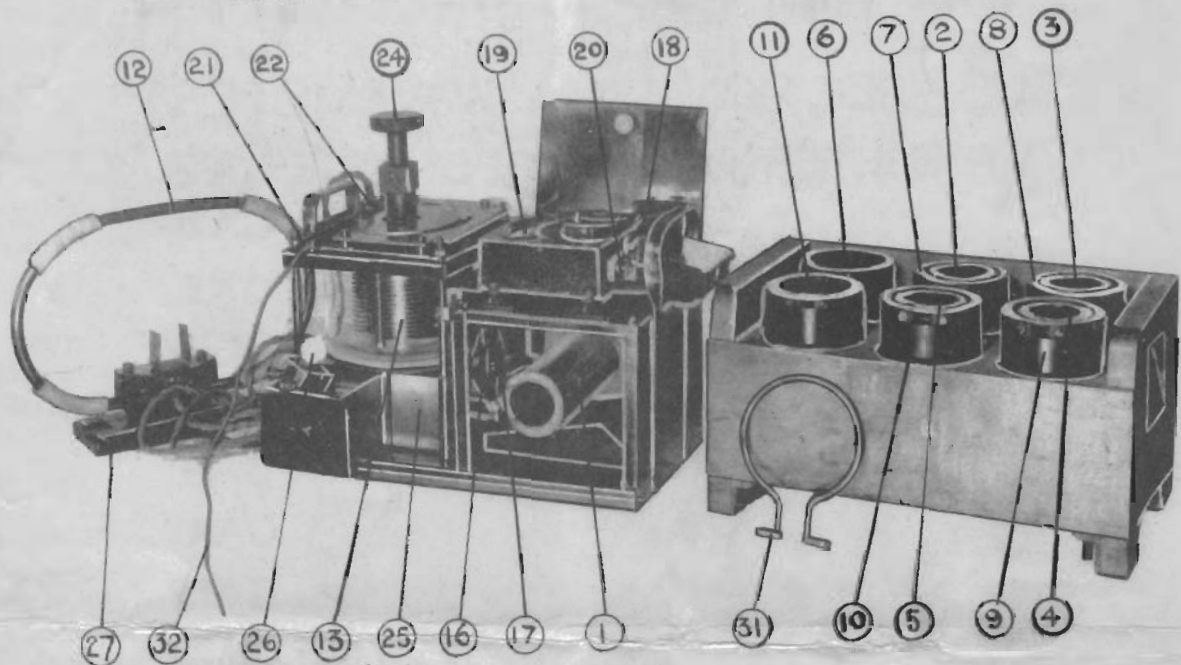


FIG. C

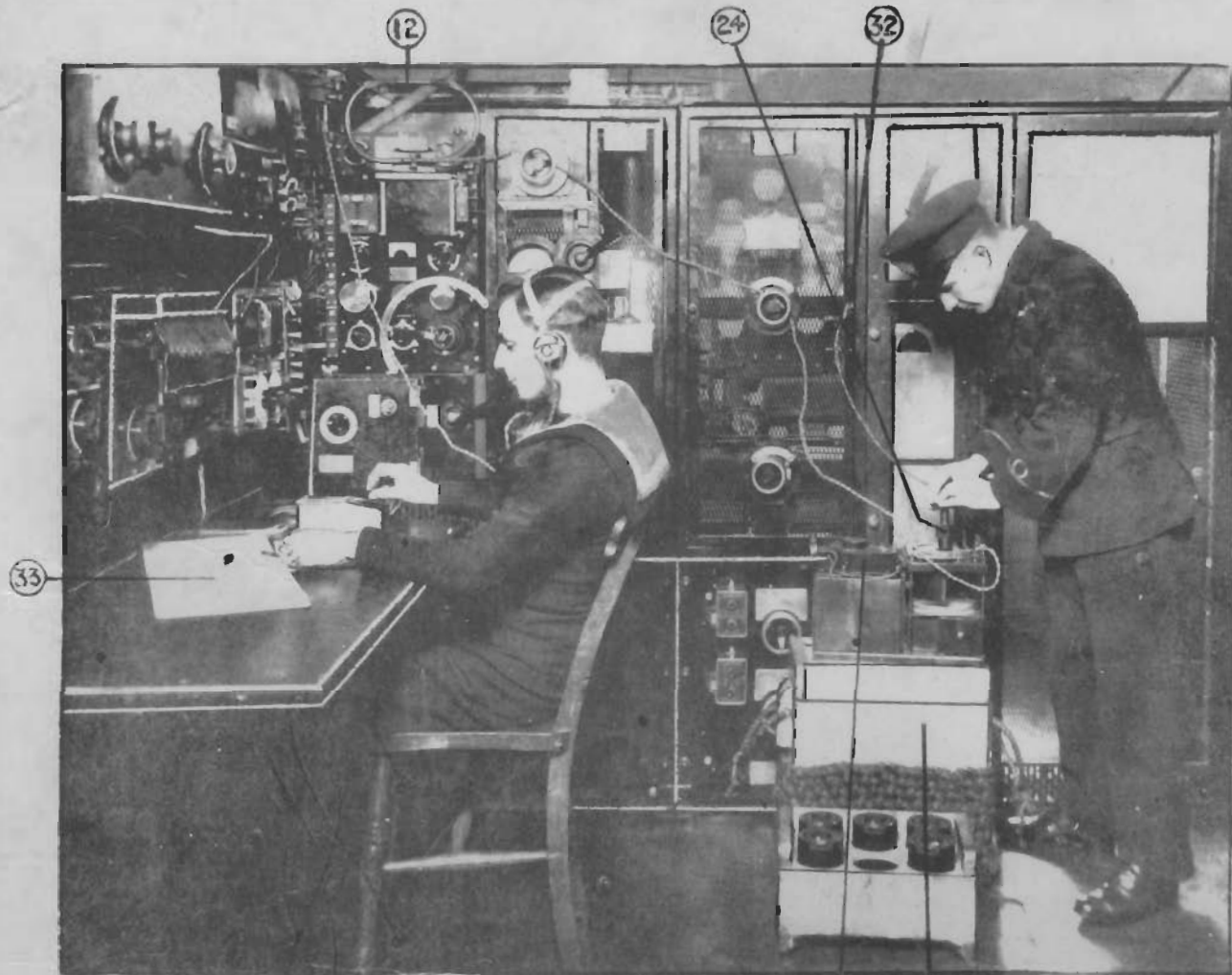


FIG. d

19

34

WAVEMETER PATTERN 1492B

A re-type of the original article [too frail to copy] in the 1930's BR222

DATE OF DESIGN: 1913

FREQUENCY RANGE: 30 – 3000 kc/s.

This is the old wavemeter for tuning L/F sets which is being superseded by wavemeter G9. The tuning inductance consists of eleven different interchangeable coils [1] to [11], only one of which is inserted at a time. The coupling coil [12] consists of a single turn of copper tubing and is directly connected into the L.C., circuit by a long flexible lead and pair of terminals [22]. The capacity consists of a variable one-jar condenser [13] to two fixed condensers [of 0.58 jar approximately each] known as the Fixed-Upper [14] and Fixed-Lower [15] condensers. The Fixed-Upper condenser can be connected in parallel with the variable by means of switch [16] and the Fixed-Lower by means of switches [16] and [17]. The Fixed-Lower can thus only be used in conjunction with the Fixed-Upper.

The indicating device consists of a galvanometer [19] operated by a thermo-junction [18] of steel and eureka wires, connected directly into the circuit by means of a pair of terminals [20]. The oscillatory current heats the thermo-junction, the heat causing a small D.C. current to be generated, which flows through the galvanometer by virtue of the Seebeck effect [see Admiralty Handbook of W/T [1931] paragraph 822 [c]].

When using the wavemeter to tune a powerful set an open thermo-junction is employed, spare wire being allowed to the ship for renewing the junction when necessary. When the terminals [20] are facing you the steel wire is your Left and the euReka wire to your Right. After renewing the wire the correct tension to the junction can be put on the steel wire by screw [29] and on the eureka by screw [30]. For tuning low power sets, a junction enclosed in a small evacuated glass bulb [26] is provided, which is many times more sensitive than the open junction.

Calibration curves are supplied in a book [33] with each instrument, the calibration being carried out in Signal School. The first and last ten degrees of the moving condenser scale are not used. The last curve in the book is a curve of the variable condenser reading against jars. The exact value of the fixed condensers is also given on this page. It should be noted that, owing to the variable condenser vanes of semi-circular shape and not of the "Square Law" type, it is only possible to produce "straight line" graphs in the calibration book if condenser readings are plotted against L.C. values. For this reason an "Abac" is provided in each book for conversion of L.C. values into wavelengths. A new type of "Abac" has been produced to convert L.C. values into frequencies which should be gummed alongside the old "Abac". It will be observed that the obsolete notation for L.C. [i.e., L.S.] is still used in these "Abac".

To minimise the effect of hand-capacity:-

- [a] The wavemeter must always be connected to earth by an external lead [32] from terminal [21]. Other terminals should NOT be used for this purpose.
- [b] An extension is fitted to the condenser handle [24].

It is important that the operator should always be in the same position relative to the wavemeter when tuning [at the condenser end] as a large alteration of position causes a small alteration in reading. The coupling coil should be placed sufficiently close to the transmitting circuit to give about half-scale reading. If placed too close, the thermo-junction may possibly be burnt out. A holder [27] is provided to hold the coupling when it is required to be stood up, and if reversed the holder will clip on the Type 2 mutual coil sliding bar. An additional coupling coil [31] is provided in each box, which was originally intended for obtaining greater accuracy by dispensing with the flexible lead, but this method is no longer used.

When using the open junction, care must be taken to screen it from draughts, since the action of the thermo-couple depends upon its temperature. The efficiency of the junction may be tested by holding a match near it; the heat

thus applied should register a small swing. The needle of the galvanometer should always be locked when finished with, to prevent damage when carrying the wavemeter about.

Where it is possible to obtain the required frequency with more than one coil, it is important to use the one which will give the greatest accuracy. This can readily be seen by comparing the curves, the most accurate one being that which, for a given variation of condenser reading gives a smaller change of L. C. value. Pattern 1492B does not give the same percentage accuracy on all frequencies – this defect has been overcome in the new instrument G9. The variable condenser is set in Signal School during calibration by the adjusting nut, which is held in position by a key plate and two screw studs over which the extension handle [24] fits. This key plate must never be removed.

The tuning inductance and fixed condensers are placed within a brass screen, which is made in two parts, one [22] round the former, the other [25] containing the latter.

The lower photograph shows the wavemeter set up in a Type 37 office ready for use. It will usually be found convenient to place the instrument on its box [34]. The earth lead [32] is shown connected to the earthed screen of the set. A receiving watch should always be set on the wave on which tuning is being carried out to observe if any interference is being caused to traffic [as is shown in the photograph].