SUB-SECTION L C SENSEFINDERS

SENSEFINDER \$41 PAGE LC 2

SENSEFINDER \$42 PAGE LC 3

## SENSEFINDER S 41

Date of design: -

1923

Where fitted:-

D/F Outfit SD.

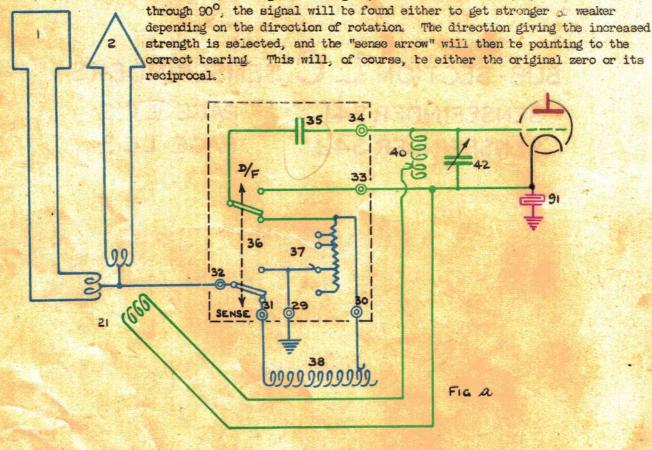
Admiralty Handbook of W/T (1931) paragraph 802 Reference .-

Sensefinder S41, formerly called the "Eliminator Reciprocal Bearing", consists of the following: - A non-inductive resistance (37) which is variable in four stages by a switch (30, 100, 200, 400 ohms), a 2-pole, 2-way "D/F Sense" switch (36) and a 0.2 jar coupling condenser (35). An inductance No. 1 tuner (38) is connected externally.

In the "Sense" position the mid-point of the goniometer windings is connected through No. 1 tuner (38) to one end of the non-inductive resistance (37) and thence through the coupling condenser (35) to the grid of the first valve of Amplifier MP. The other end of the non-inductive resistance (37) is connected to earth. The filament of the first valve of M9 is connected to earth through a 1 mfd. condenser (91), so that variations of potential across the non-inductive resistance (37), due to the vertical effect of the loops is applied between grid and filament of this valve. It will be seen that the coupling condenser (35) is in parallel with the secondary condenser (42) of tuner A41. In the D/F position one of the contacts of "D/F - Sense" switch (36) places the coupling condenserdirectly in parallel with the grid tuning condenser (42) (in Tuner A41) so that the tuning will not he affected when switching over from D/F to Sense and vice versa. The other contact of this switch earths the mid-point of the goniometer windings so that the vertical effect is eliminated. Operation in "SENSE" position. To obtain correct phasing two things are essential;

- The loops, used as vertical aerials, must be detuned capacitively. This is done, first by tuning for resonance with the No. 1 tuner (38), and then decreasing the amount of inductance
- Tuner A41 must be in the "Direct" position, as in the "coupled" position an intermediate circuit is introduced which alters the phasing.

The search coil (21) will have been left in the position giving a zero The act of moving the switch (36) to "sense" will once more bring in the signal, if the search coil (21) is then rotated



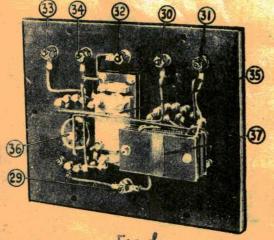


Fig. 6

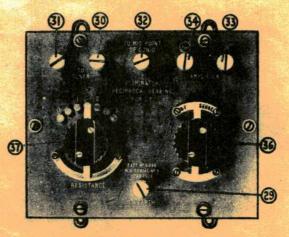


FIG. C

## SENSEFINDER \$42

Date of design ... Frequency range: --

55 - 690 kg/s.

Where fitted:--

D/F Outfit SGX and sometimes in D/F Outfit SD and Receiver

Valve used:--

One MR:15.

Reference: --

Admiralty Handbook of W/T (1931) paragraph 801

Sensefinder 542 contains a simple valve circuit with an inductance (6) in the anode lead of the valve (1) which is coupled to two coils (4)(5), one being in each lead from the frame coil (search coil in SD) to the tuner. The amplitude of the anode current is controlled by a filament rheostat (8).

A small vertical aerial is used and is connected to a three-way switch (7) marked "D/F". "Sense", "Corr.". When this switch (7) is in the "Sense" position the aerial is connected to filement negative and earth through a 2 megohm resistance (11). Voltage variations across this resistance due to an incoming signal are applied between grid and filament of the valve by means of the jar coupling condenser (9). A 2 magohm grid leak is fitted.

With the switch (7) in the D/F position the vertical aerial is disconnected, and the H.T. supply to the valve is troken by a second contact of the switch (7). The sensefinder is then out of use.

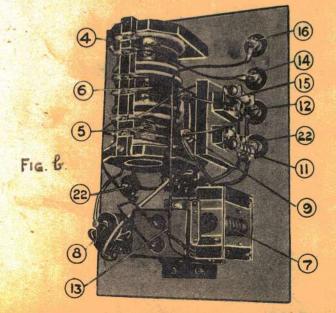
In the "Corr" position the vertical aerial is connected to the semi-circular corrector S61, the sensefinder still being disconnected.

Operation When a bearing or its reciprocal has been obtained with the switch (7) of the sensefinder in the "D/F" position, the frame coil (or search coil) is brought to rest in one of the two positions of minimum signal strength. The switch (7) is then turned to the "sense" position when louder signals will be heard. (The filament rheostat (8) of the sensefinder should be adjusted until the strength of the signals is approximately equal to the strength of signals given by the frame coil (or search coil) alone in the position of raximum signal strength.) Then - if fitted with a goniometer - the sense is obtained by means of the "sense arrow" as with S41 (see page LC2). If fitted with a frame coil, where there is no "sense arrow", the procedure is slightly different. The

TO TO FRAME 10 TUNER 18 CORR +19 H.T. 12 20 <del>-</del>0 L.T. 0 21

pointer will again be on the original zero, and the movement of the switch (7) to "sense" will bring in the signal If a further CLOCKWISE movement of the pointer causes an increase of signal strength, then the original zero is the correct tearing. opposite effect is experienced, the correct bearing is the reciprocal of the original zero.

Fig. a



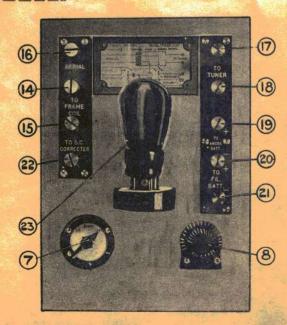


FIG. C