2. GENERAL. D/F outfits FA, FC and FH use a frame coil which is fitted at the mast head and is designed for working on M/F or H/F. The frame coil consists of two small crossed coils fitted at right angles to each other. Two sizes of frame coils have been designed, S16 and S17, the former being smaller than the latter.

Frame coil S16 is used with outfit FH but either S16 or S17 can be used with outfits FA and FC.

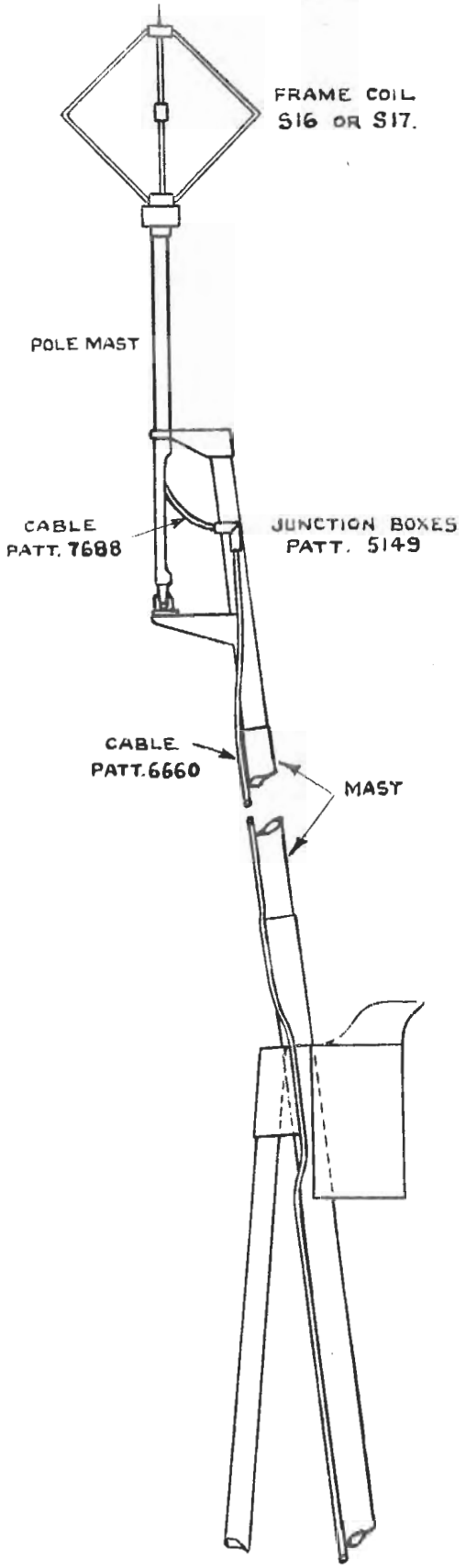
Two open (or "Sense") aerials are fitted with outfit FC and one with outfits FA and FH. These aerials are used for normal watch when searching for signals and, in the case of M/F sets, for obtaining "Sense" when the frame coil is used for direction finding on M/F.

3. ARRANGEMENT OF APPARATUS AT MASTHEAD. The frame coil is supported on a special polemast which is fitted at the masthead as shown in Fig. 1.

The coil and polemast can be struck, using the small portable boom provided, in the manner shown in Fig. 2. When not in use the portable boom is stowed below.

A stowage clip is fitted at the bottom of the D/F polemast. The clip is used to secure the ends of the flexible cables when they are disconnected from the junction box.

ARRANGEMENT OF APPARATUS AT MASTHEAD.



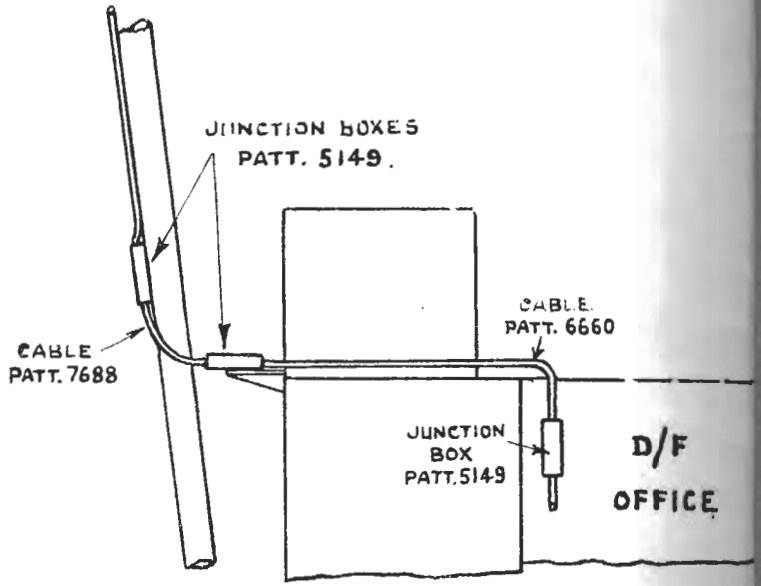
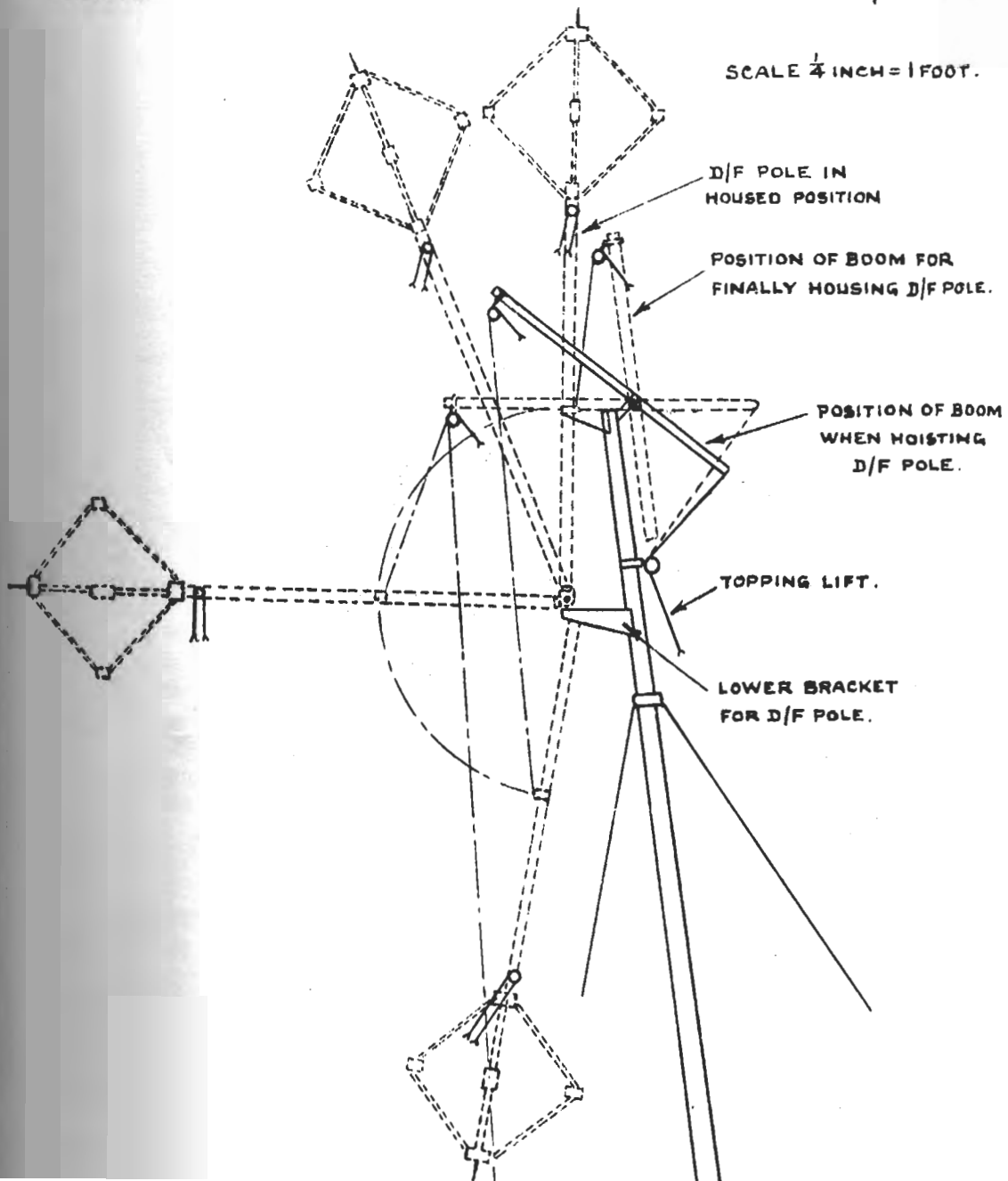

JUNCTION BOXES
PATT. 5149.
CABLE
PATT. 7688
CABLE
PATT. 6660
JUNCTION
BOX
PATT. 5149
D/F
OFFICE

Fig. 1

TYPICAL ARRANGEMENT FOR HOISTING OR STRIKING D/F POLE



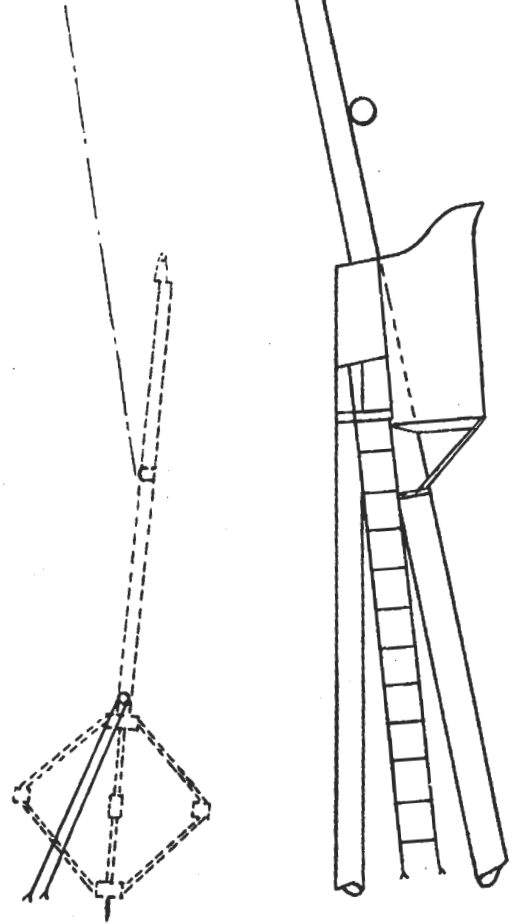


FIG. 2.

FRAME COIL S16.

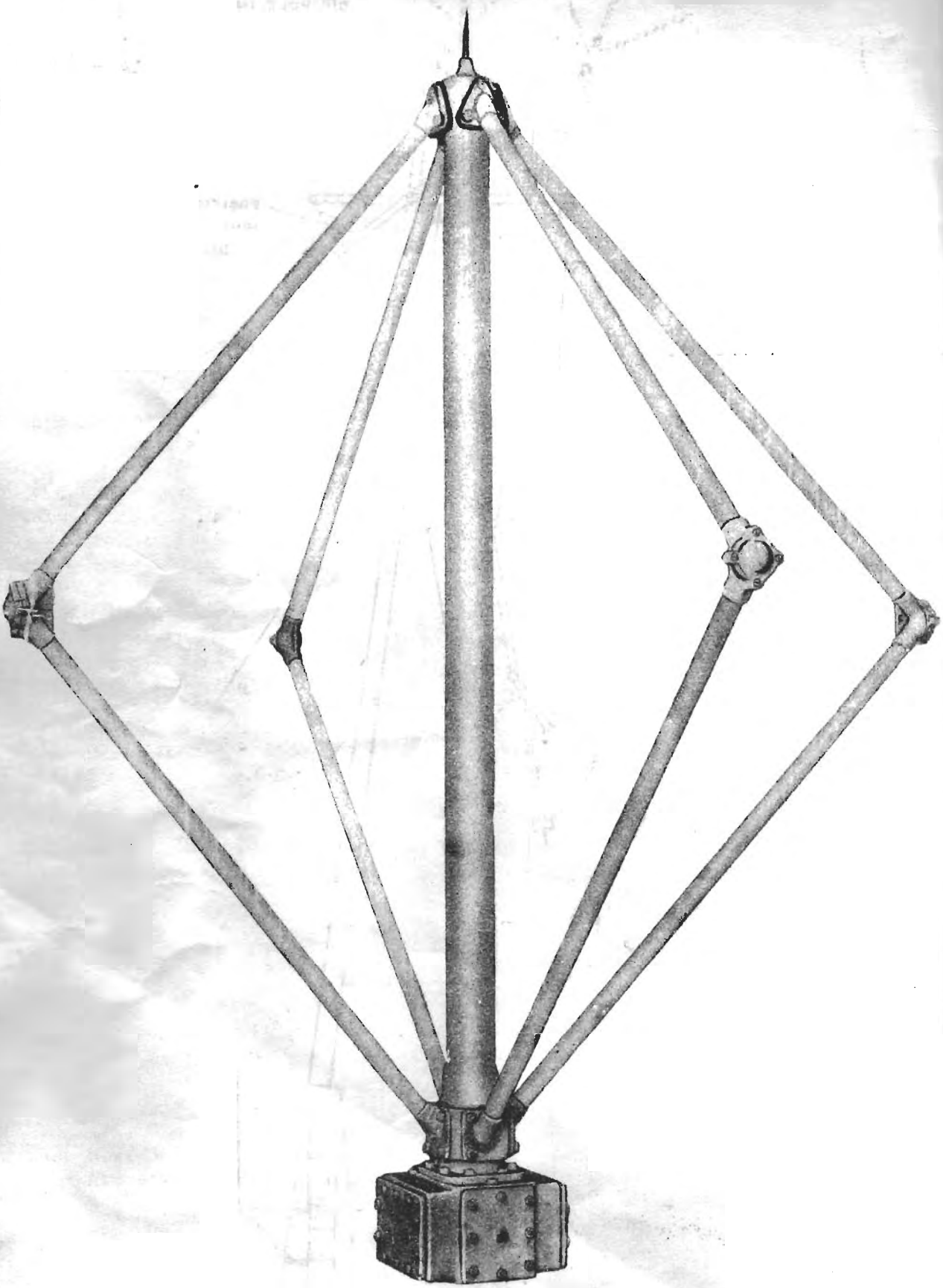


FIG. 3.

CHAPTER II.

FRAME COIL AND TRANSMISSION LINE SYSTEM.

1. FRAME COIL S16. (See Fig. 3). The loops of the frame coil S16 are three feet square and each consists of two turns of rubber insulated cable 12/.01 inch conductor wound on loaded ebonite spacers inside a one-inch steel tube framework. The four tubes enclosing the frame coil windings are interrupted near the top by moulded ebonite insulators. This arrangement prevents induced currents from circulating round the metal frame.
THE INSULATORS MUST BE KEPT CLEAN AND ON NO ACCOUNT PAINTED OVER.

A pointed rod, which is connected to the centre supporting strut, is fitted on the top of the frame coil as a protection against the effects of lightning.

Frame coil S16 is always used with D/F outfit FH.

2. FRAME COIL S17. This coil is similar to frame coil S16 except that the loops of the coil are 4 feet 6 inches square.

In the case of D/F outfits FA and FC, either frame coil S16 or S17 can be used. The frame coil to be fitted in any particular class of ship will depend on the structure and mast equipment.

3. TRANSMISSION LINE SYSTEM. The ends of the loops of the frame coil are connected, in the box at the base of the loops, to two twin core rubber insulated cables, Pattern 7688, which pass down the polemast on which the frame coil is mounted and enter two junction boxes, Pattern 5149, at the truck of the mast. From this point the loops are connected to the D/F office by Pattern 6660 Cable with junction boxes and short connecting links of cable, Pattern 7688, fitted at the point where the cables leave the mast.

In ships where the mast is in one piece, the cable between the junction boxes at the top and bottom of the mast is continuous. (See Fig. 1).

In ships where the mast is built in sections, the cable is interrupted and junction boxes, with connecting links of flexible cable, are fitted at each break in the mast.

The junction boxes, Pattern 5149, have been designed for use in making connections between the cables in a straight line or on a right angled bend. The assembly of a junction box for a straight run of cable is shown in Fig. 4 and for a right angled bend in Fig.5.

Each junction box is fitted to take a Pattern 6660 twin core cable at one end and a Pattern 7688 twin core cable at the other.

Pattern 6660 cable is a twin core, paper insulated, low capacity cable, with a copper sheathing and lead covering. It is used as the main connecting cable in the aerial system.

Pattern 7688 cable is a flexible twin core, rubber insulated cable, with metal braiding and a cotton covering. This cable is used for making the connections between the junction boxes on the mast, also between the junction boxes in the lobby and aerial change-over switch in the D/F office.

JUNCTION BOX PATTERN 5149.

STRAIGHT THROUGH ARRANGEMENT

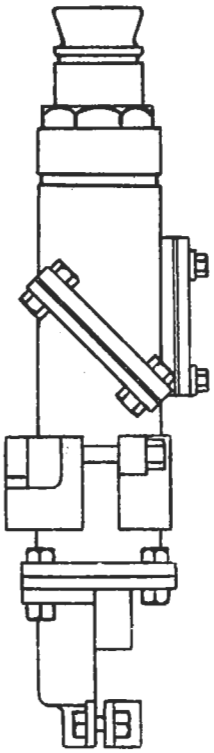
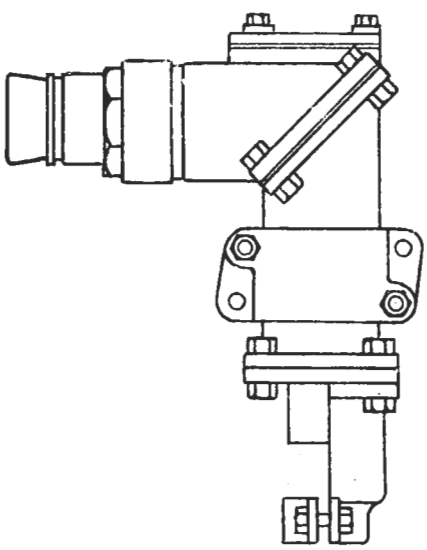


FIG 4.

CORNER ARRANGEMENT



In order to provide a means of identifying the cables and terminals when the aerial leads are disconnected for any purpose, such as testing, a system of marking the cables and junction box connections is used. The tail cables of the frame coil are marked F, A, P or S and are connected to terminals in the uppermost junction box.

One core of the fore and aft aerial cable is marked with one ring and one core of the port and starboard aerial cable is marked with two rings at each point where the cables enter a junction box.

The appropriate terminals in each junction box are marked with rings to correspond with the markings on the cables. The cable core which is marked with one ring is connected to the forward aerial and the cable core marked with two rings is connected to the port aerial.

A label is fitted in the D/F office near the aerial change-over switch stating the relationship of cores to terminals as follows :-

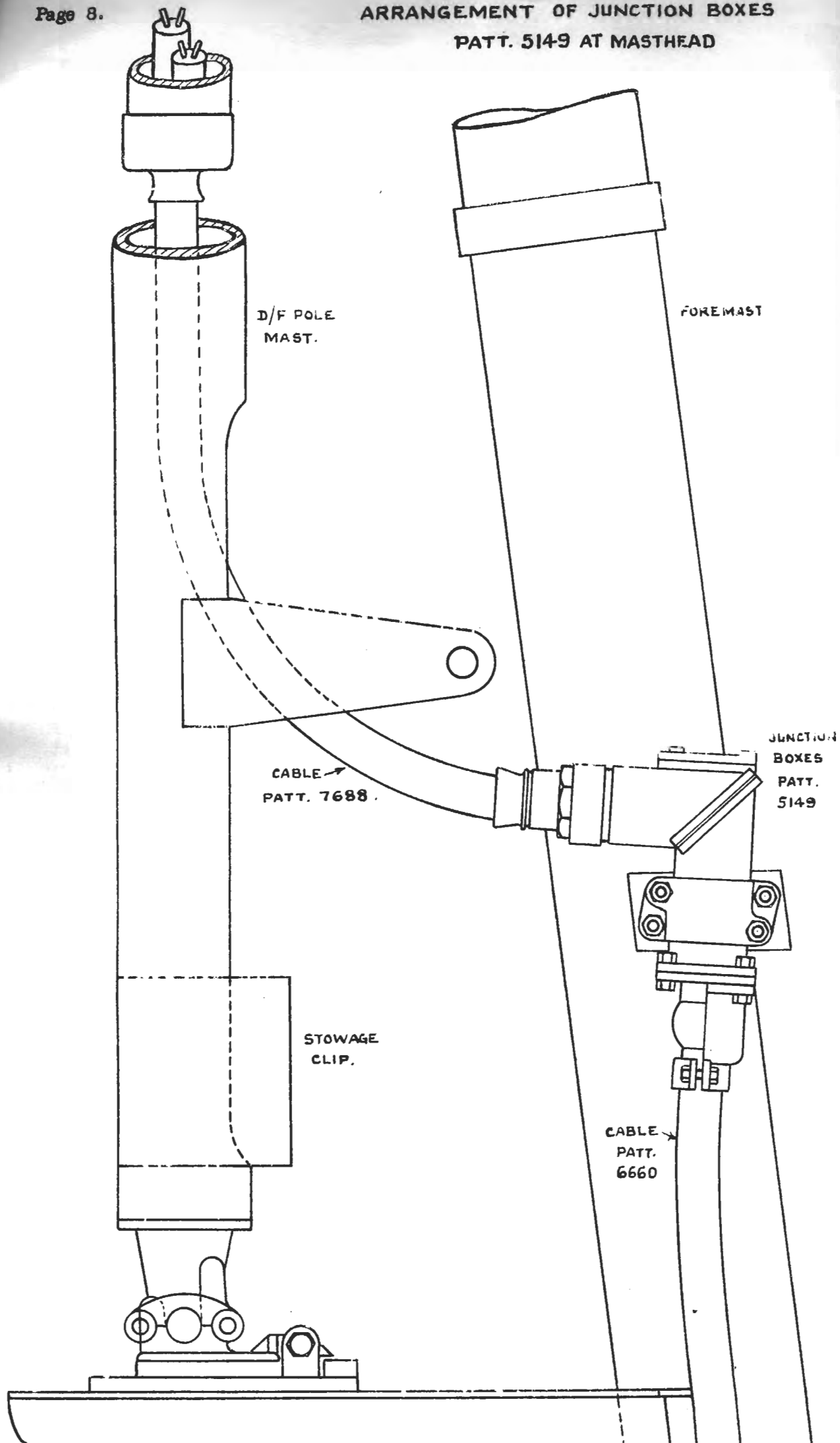
Terminal and cable marking in D/F aerial circuit junction boxes.	
Fore and aft aerial.	F - 1 ring. A - unmarked.
Port and starboard aerial.	P - 2 rings. S - unmarked.

Each junction box is marked to indicate whether it is connected in the "F and A" or "P and S" aerial lead. The boxes nearest the D/F office are tallied "F and A1" and "P and S1", respectively; those next in order "F and A2", "P and S2", and so on to the uppermost box.

Each junction box is filled with white vaseline, known as "molle alb", to exclude moisture. A grease gun is supplied for the filling process.

The arrangement of the junction boxes and connecting cables fitted at the top of the mast is shown in Fig. 6.

ARRANGEMENT OF JUNCTION BOXES PATT. 5149 AT MASTHEAD



CHAPTER III.

COMPONENTS COMMON TO OUTFITS FA, FC AND FH.

1. **GENERAL.** Some of the components used with outfits FA, FC and FH are common to the three outfits, as shown in the table below. Certain of the components and receiving instruments are duplicated in outfit FC to enable simultaneous watch to be kept on M/F and H/F.

In the case of outfit FH, which is designed for H/F only, the M/F radio-goniometer S27 and tuner A47 are not fitted.

TABLE OF COMMON COMPONENTS.

D/F Outfit	Frame Coil.	Aerial C.O.S. Design A.	Radio Goniometers		Open Aerials	Aerial Safety Switch	Switch Unit Design A.	Receiving Instruments.				
			M/F	H/F				M/F Tuner	H/F Het. Detector.	Amplifier	Note Magnifier	Het. Unit.
FA	S16 or S17	One	S27	S29	One	One	One	A47	E27	M9	N30	K7
FC	S16 or S17	One	S27	S29	Two	Two	Two	A47	E27	M9 (Two)	N30 (Two)	K7 (Two)
FH	S16	One	-	S29	One	One	One	-	E27	M9	N30	K7

2. **AERIAL CHANGE-OVER SWITCH, DESIGN "A".** A diagram of the connections and a photograph of this instrument are shown in Figs. 7 and 8 respectively. Its function is to connect the D/F loops to the M/F radio-goniometer S27, the H/F radio-goniometer S29 or earth. In D/F outfit FH the M/F goniometer connections are not used.

The connections from the fore and aft and athwartships loops are taken into separate screened compartments of the change-over switch and the two loops are connected to the M/F or H/F goniometer or earth by means of separate handles on the switch. The switch is engraved to show where the various incoming and outgoing cables should be connected and also the position of the handles for connecting the loops to either goniometer. In the "Earth" position, the loops are disconnected from the goniometers.

A gas gap arrester is fitted across each pair of aerial leads in the switch.

SWITCH AERIAL CHANGE OVER.

(ALTERNATIVE D/F)

DESIGN "A"

INTERNAL CONNECTIONS (DIAGRAMMATIC).

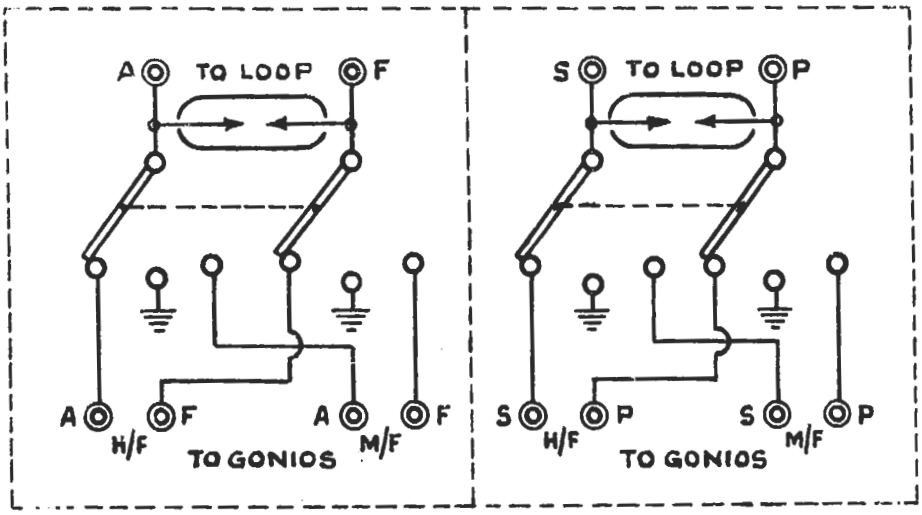
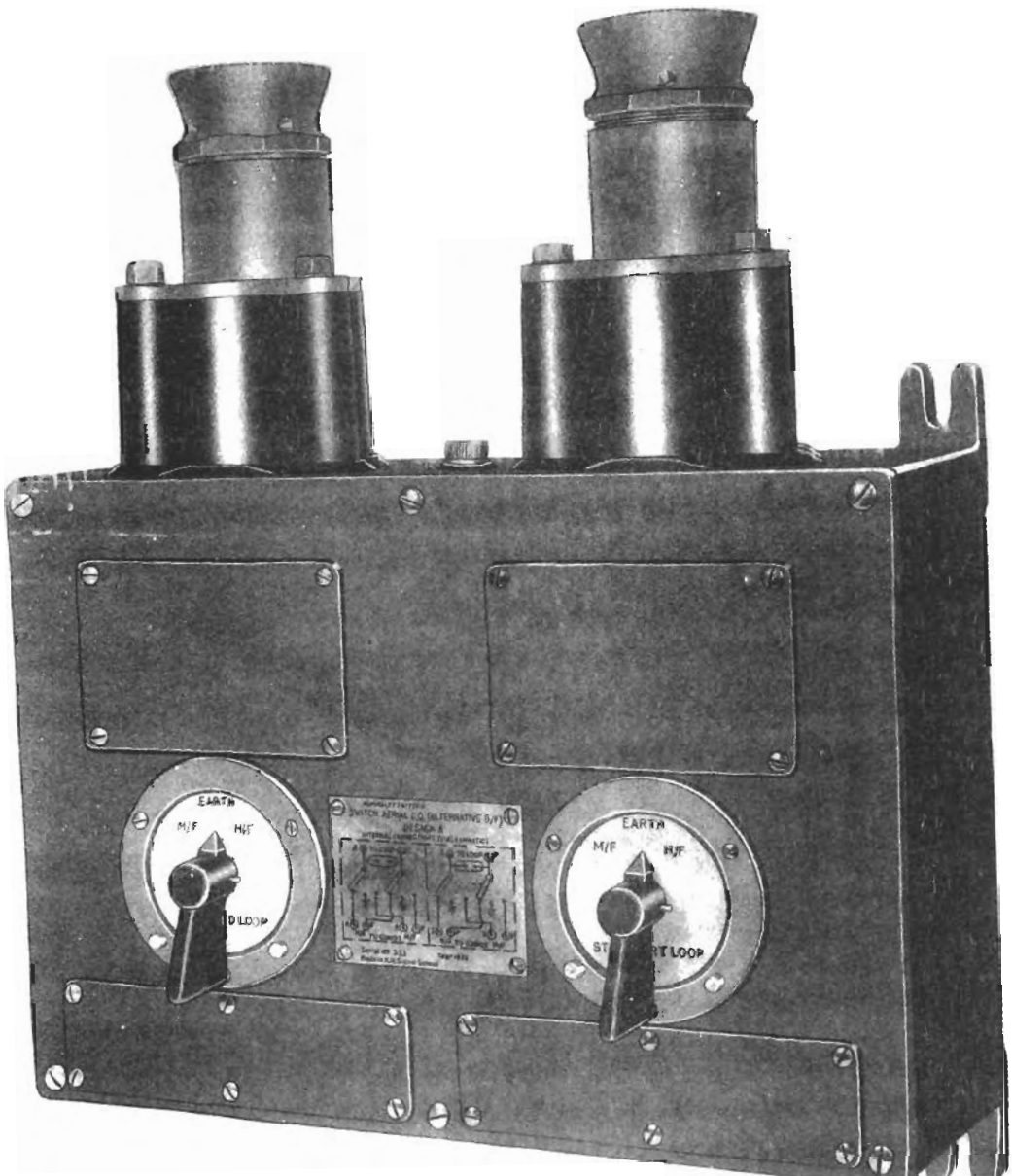


FIG. 7.



3. RADIO-GONIOMETER S27. (FIG. 9). Owing to the smallness of the aerial system it has been found necessary to obtain the maximum sensitivity in all parts of the receiving apparatus and for this reason goniometer S27 has been designed with a very high coefficient of coupling between the field windings and the search coil. The coupling has been increased above that which is obtainable in ordinary goniometers by winding the coils round a centre core of specially prepared iron.

The search coil is made in two parts, one of which has been removed to show the field coils in the photograph, Fig. 9.

GONIOMETER S 27.

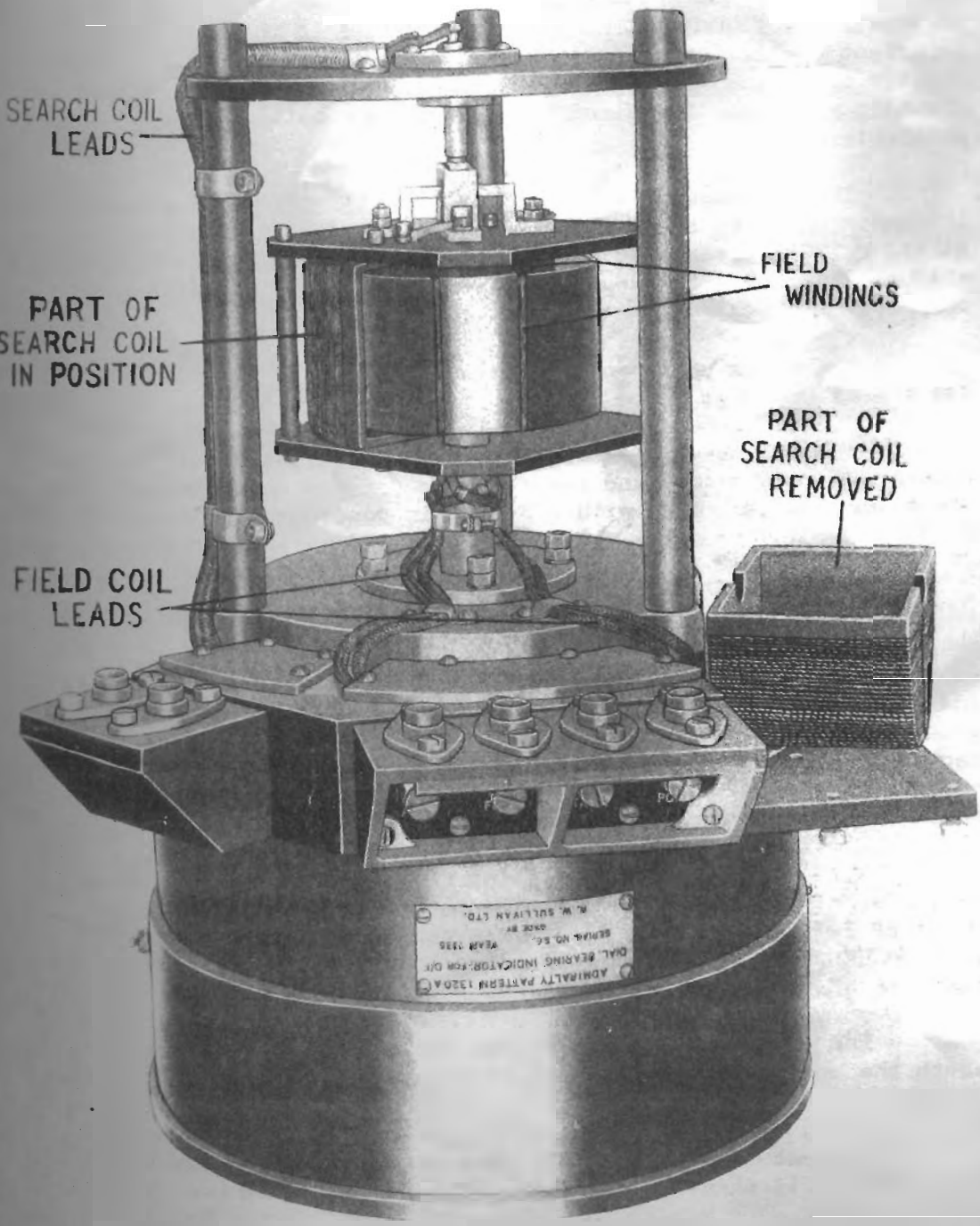


Fig. 9.

4. RADIO-GONIOMETER S29. (FIGS. 10 AND 11). This instrument has been designed for use on high frequencies and consists of a small rectangular search coil which can be rotated (on a spindle) inside two field windings. The search coil is enclosed in an electrostatic screen consisting of a number of 22 S.W.G. enamelled copper wires wound on two halves of a cylindrical former. Two leads are run inside the spindle to connect the search coil to the slip-rings and brush gear fitted at the bottom of the goniometer.

The field windings are wound on a former which is fitted over the electrostatic screen and are connected to a terminal block on the top of the goniometer. This terminal block is fitted with links which can be removed for isolating aerials or goniometer field windings as desired during testing operations.

As shown in the photograph, Fig. 11, the slip-ring connections to the search coil consist of two pairs of fine wires maintained in tension by means of adjustable springs. These wires and springs should seldom require attention or adjustment but if in the course of time it is found that noises are produced in the receiver by imperfect contact at the slip rings, they should be cleaned and lightly oiled and the adjustment of the springs checked. Access to the slip ring gear is gained by removing the bottom plate of the goniometer.

The goniometer is fitted with a Patt. 1320 dial bearing indicator which consists of two scales. One scale is fixed and is marked 0-180 degrees, red and green; the other is a rotating scale, graduated from 0 - 360 degrees driven by the ship's master gyro compass.

The fixed scale enables relative bearings and the rotating scale true bearings to be read.

The dial bearing indicator is identical with that used on modern M/F goniometers and has fittings for cam correctors. These connectors are not used with H/F and, in consequence, are not fitted in this goniometer. The white (cam) pointer is secured so that it reads the same bearing as the black fixed pointer.

5. OPEN AERIALS. One open aerial is used with outfits FA and FH and two with outfit FC. The aerial is connected to a group M deck insulator and a Pattern 9749 cable is run from the deck insulator to a Pattern 1914 junction box fitted in the W/T office lobby. A gas gap arrester is fitted inside the junction box.

The open aerial is connected from the junction box to an aerial safety switch, fitted inside the silent compartment, by means of Pattern 1389A cable. This cable is sheathed with Pattern 8282 phosphor bronze braiding which is continuous through the side of the silent compartment.

The aerial safety switch has two positions and is used to earth the open aerial or connect it to the switch unit, D/F, fitted in the D/F panel.

The methods of using the open aerials are explained in the appropriate chapters on "Operation" for each outfit.

GONIOMETER S29.

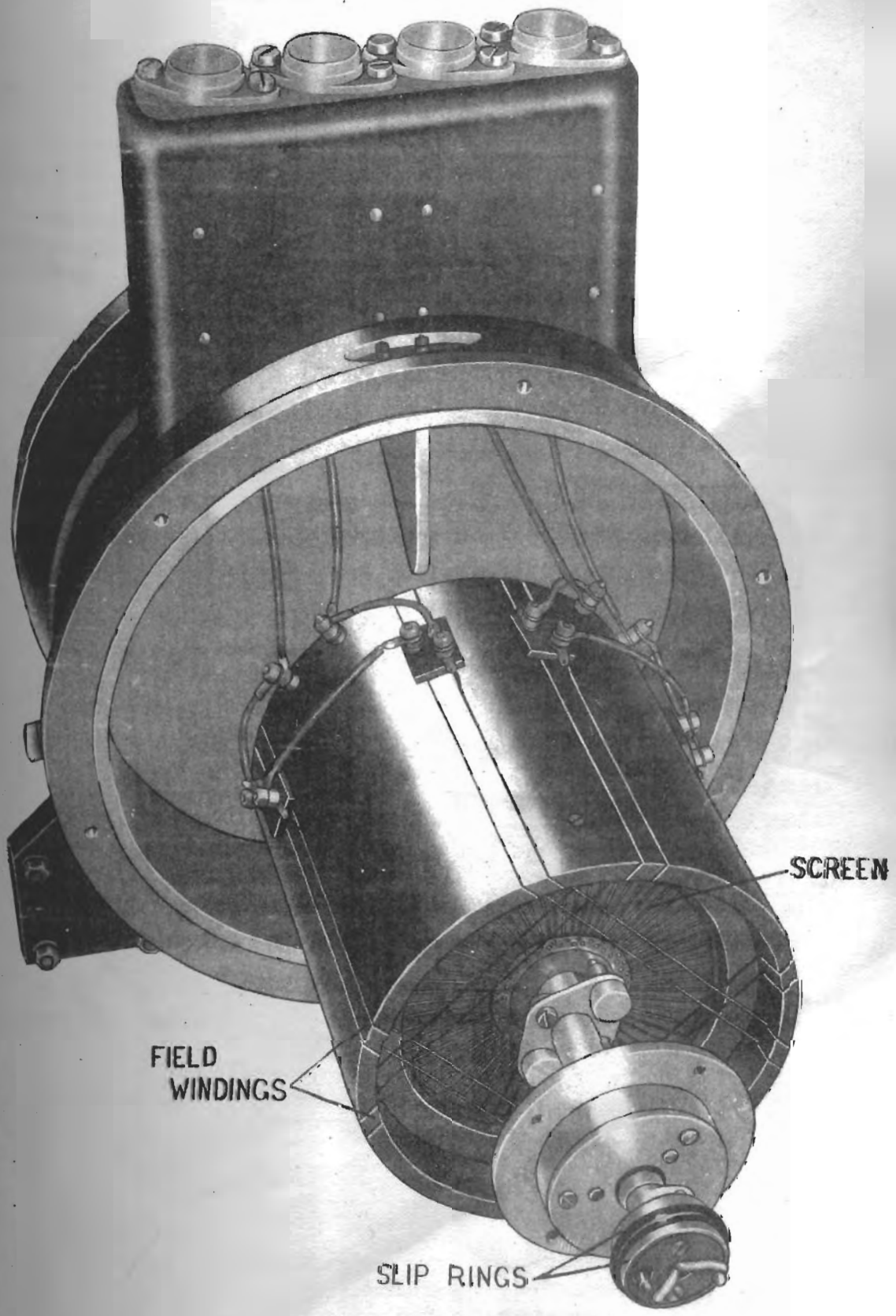


FIG. 10.

GONIOMETER S29.

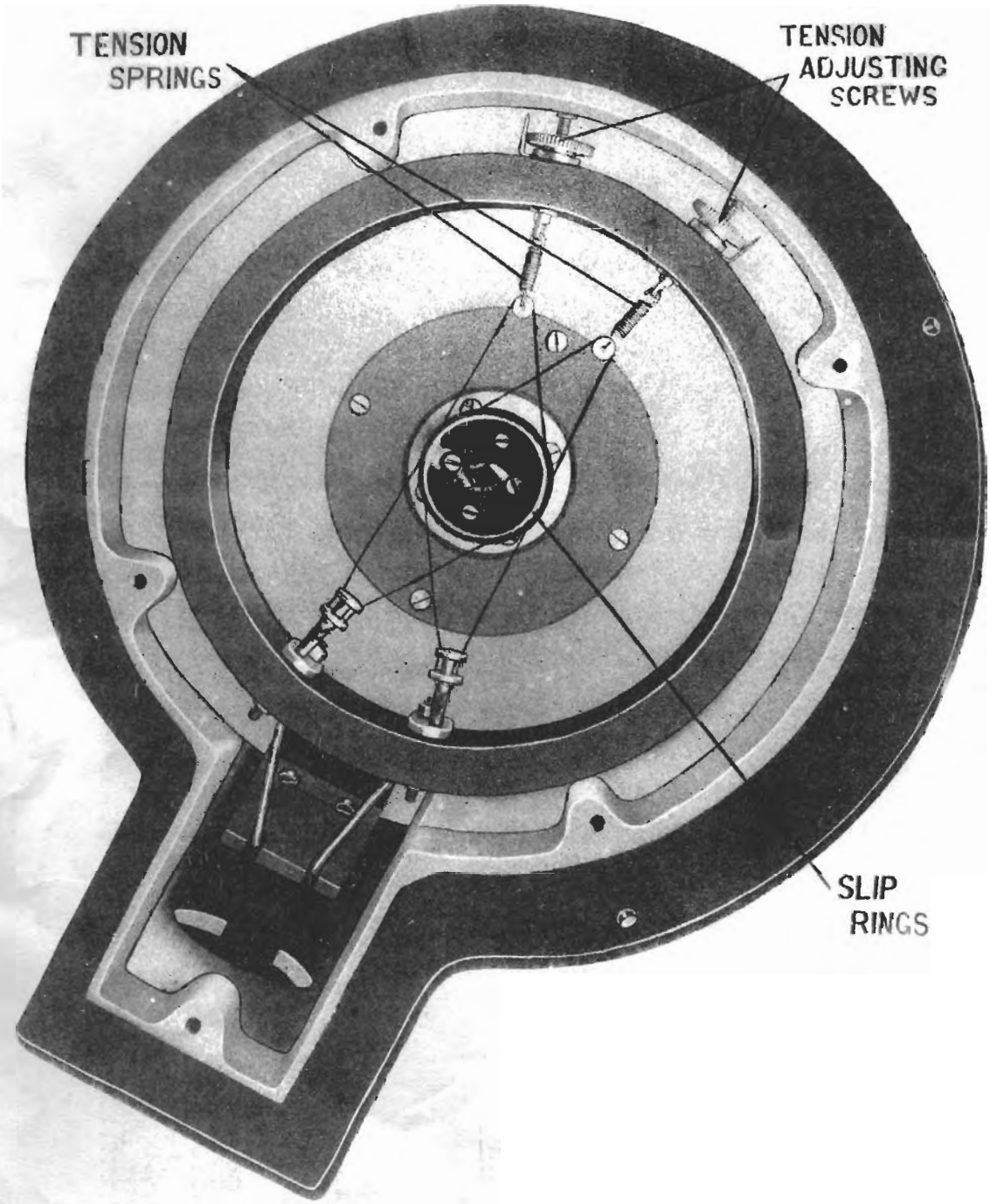


FIG. 11.

SWITCH UNIT, D/F, DESIGN A.

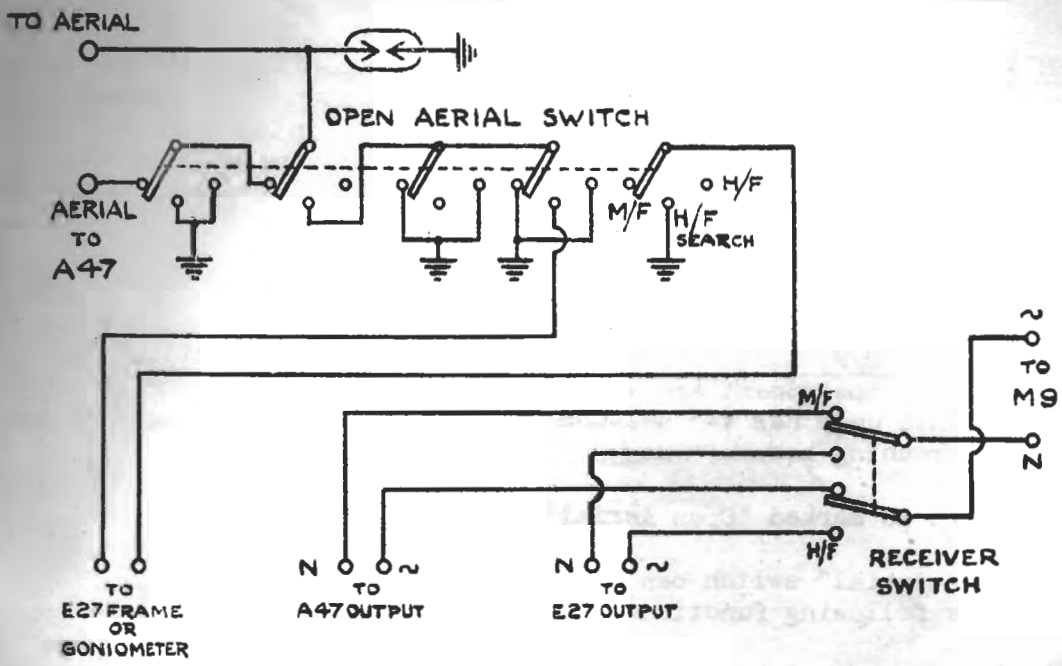
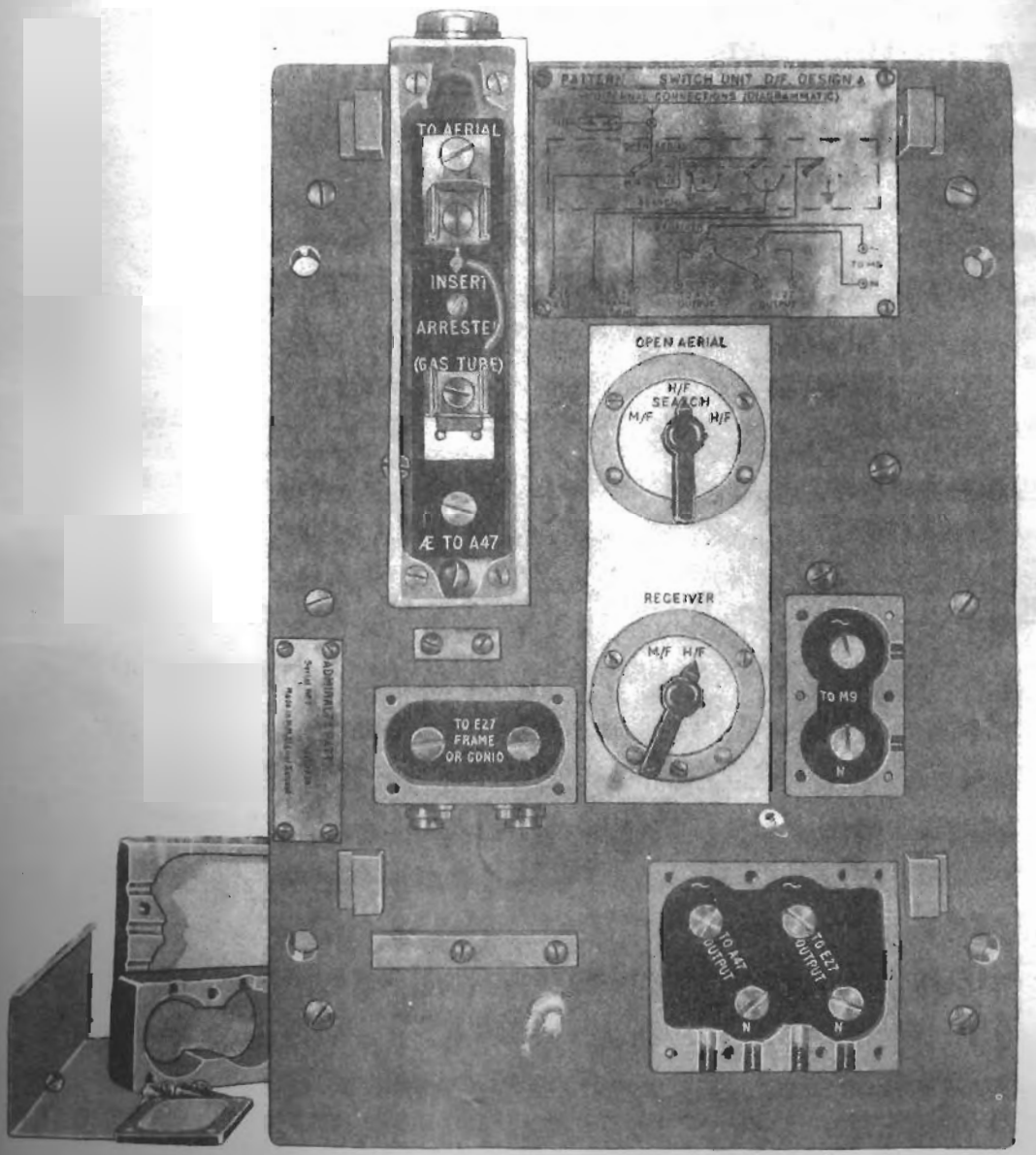


FIG.12.



6. AERIAL SAFETY SWITCH. This switch has two positions and is used to earth the open aerial or connect it to the switch unit, fitted in the D/F panel. The switch is hand controlled and, in addition to the aerial contact arm, has two contact arms to operate the 20 volt warning circuits which indicate when the main W/T office is transmitting on the main W/T set.

7. SWITCH UNIT, D/F, DESIGN "A". A diagram of the connections and a photograph of this instrument are shown in Figs. 12 and 13 respectively. This unit has two switches which are separately screened and enclosed in a screening box.

One switch is marked "Open Aerial" and the other "Receiver".

The "Open Aerial" switch can be set to one of three positions to carry out the following functions :-

D/F Outfit FA.

"M/F" Position. Connects the open aerial to tuner A47.

"H/F Search" Position. Connects the open aerial to Heterodyne Detector E27.

"H/F" Position. Isolates the open aerial.

D/F Outfit FC.

Two switch units, Design "A", are used with outfit FC. One unit is used with the M/F and the other with the H/F receiving apparatus.

The unit fitted with the M/F set connects the M/F open aerial to the M/F receiving apparatus to carry out the following functions :-

"M/F" Position. Connects the M/F open aerial to tuner A47.

"H/F Search" Position. Not used. If the switch is left in this position the open aerial is isolated.

"H/F" Position. Isolates the M/F open aerial.

The unit fitted with the H/F set connects the H/F open aerial to the H/F receiving apparatus and is used as follows :-

"M/F" Position. Not used. If the switch is left in this position, the open aerial is isolated.

"H/F Search" Position. Connects the H/F open aerial to heterodyne detector E27.

"H/F" Position. Isolates the H/F open aerial.

"M/F" Position. Not used. If the switch is left in this position, the open aerial is isolated.

"H/F Search" Position. Connects the open aerial to heterodyne detector E27.

"H/F" Position. Isolates the open aerial.

The "Receiver" switch can be set to "M/F" or "H/F" and is used in outfits FA, FC and FH to carry out the following functions.

In outfit FA, the switch is used to connect the output circuits of tuner A47 or heterodyne detector E27 to the input terminals of amplifier M9.

In outfit FC, the switch in the unit fitted with the M/F apparatus is set permanently to "M/F" and the switch in the H/F apparatus to "H/F".

In outfit FH the switch is set permanently to "H/F".

8. RECEIVING INSTRUMENTS. The following receiving instruments are fitted as a whole or in part in outfits FA, FC and FH, according to the requirements of the outfit :-

Tuner A47.
Heterodyne Detector E27.
Amplifier M9.
Note Magnifier N20.
Heterodyne Unit K7.

Details of amplifier M9, note magnifier N20 and heterodyne unit K7 are given in the appropriate sections of BR.222 "Notes on W/T Sets".

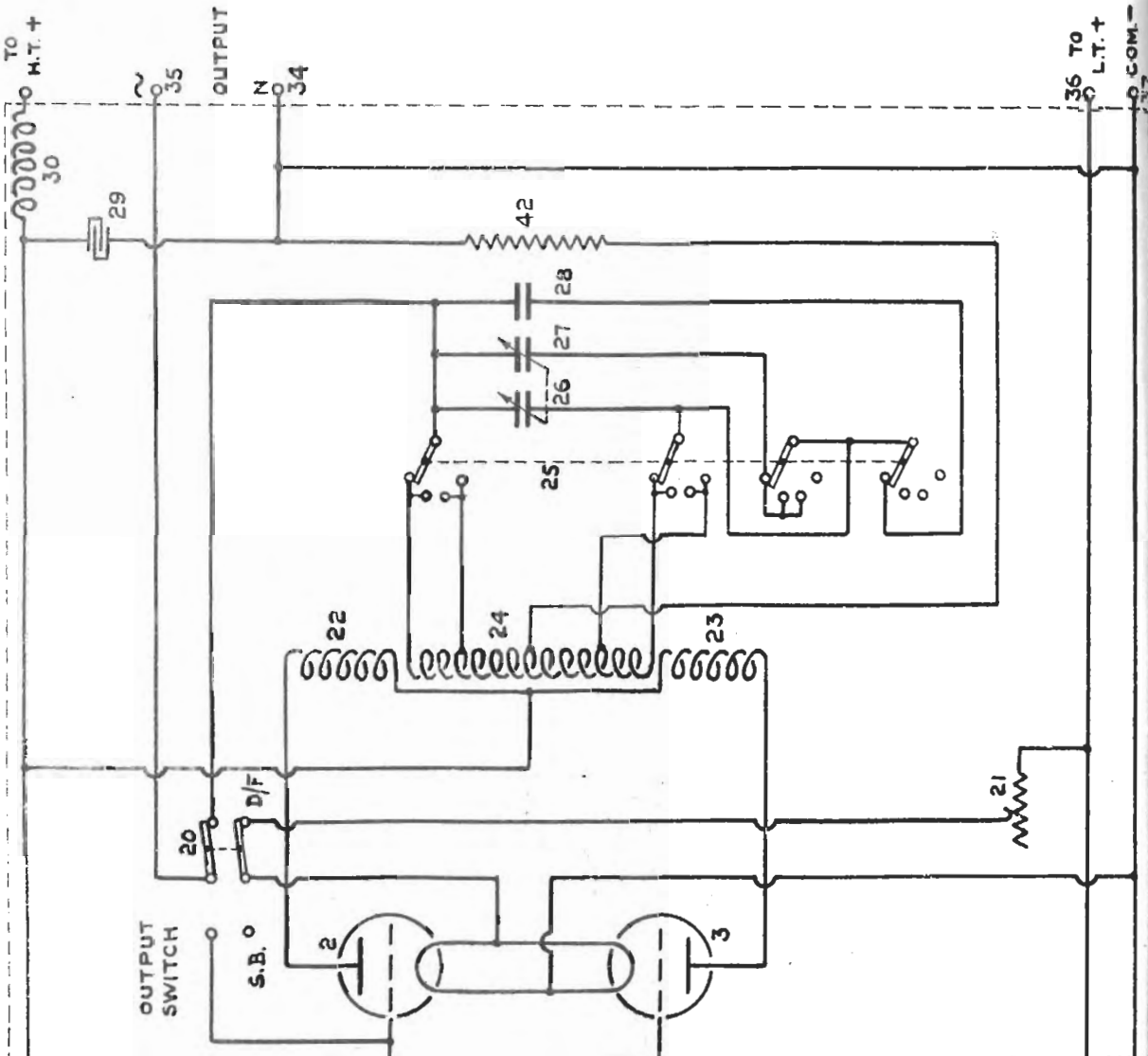
Heterodyne detector E27 is similar to E26X, described on pages EB4, 5 and 6 of BR.222 and differs only in constructional details. A circuit diagram of E27 is given in Fig. 21.

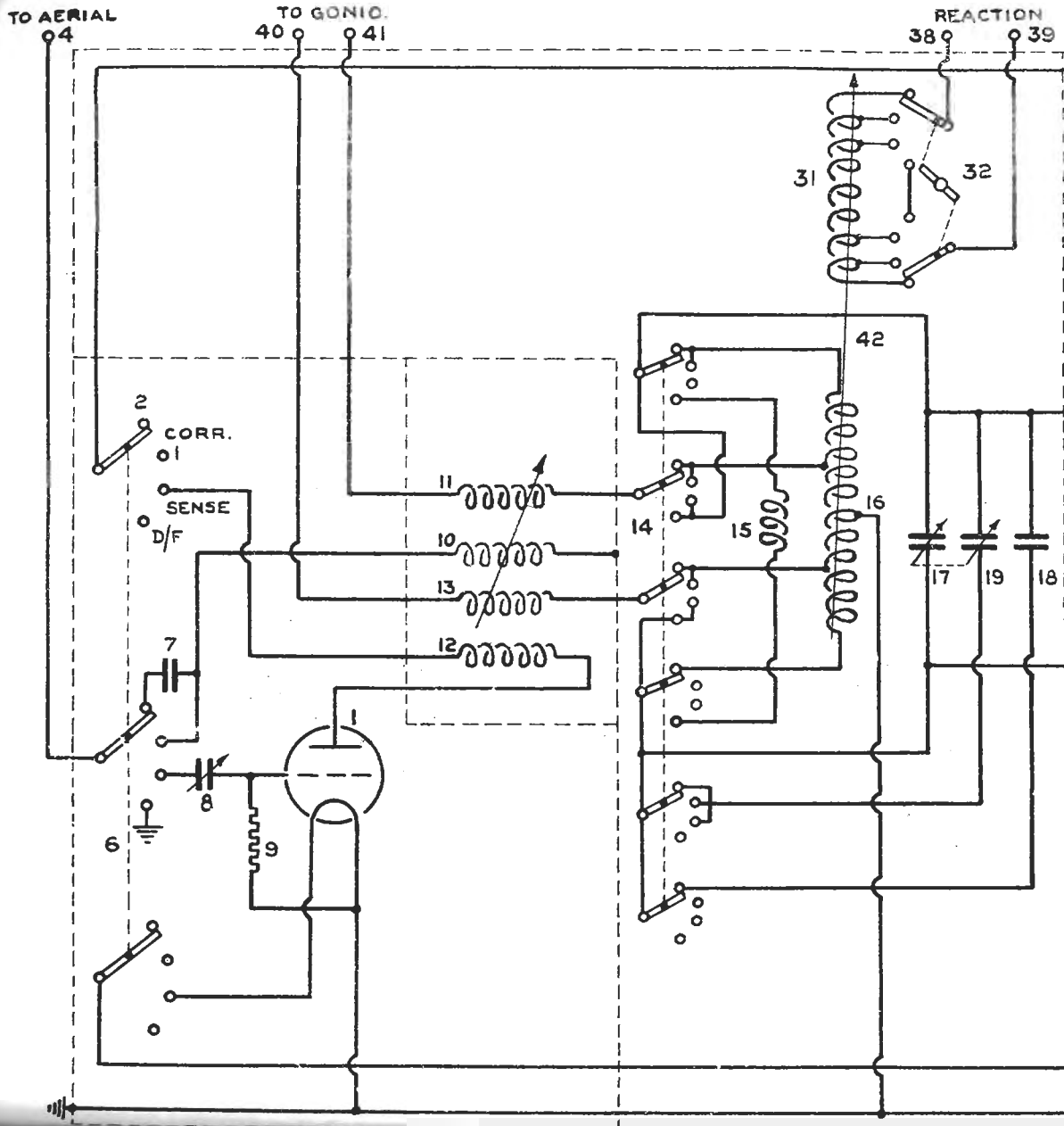
The BR.222 notes on tuner A47 are in course of production but as these will not be available when this book is issued a description of tuner A47 is given below.

9. TUNER A47.

Date of design	...	1931.
Frequency range	...	60 to 600 kc/s.
Where fitted	...	D/F Outfits FA, FC, FH and LM.
Valves used	...	One NR15A for sensefinder. Two NR16A in secondary circuit of tuner when in "D/F" position.
References	...	Admiralty Handbook of W/T, (1931): Sense determination - paragraph 798; Semi-circular corrector - paragraph 809.

TUNER A47.


TO H.T. +
35
OUTPUT
34
36 TO L.T. +
COM. -
37
30
29
42
28
27
26
25
22
24
23
21
D/F
20
OUTPUT SWITCH
S.B.
2
3


TO AERIAL
4
TO GONIO.
40
41
REACTION
38
39
31
32
42
2
CORR.
1
SENSE
D/F
11
10
13
12
14
15
16
17
19
18
7
1
8
6
9

TUNER A47.

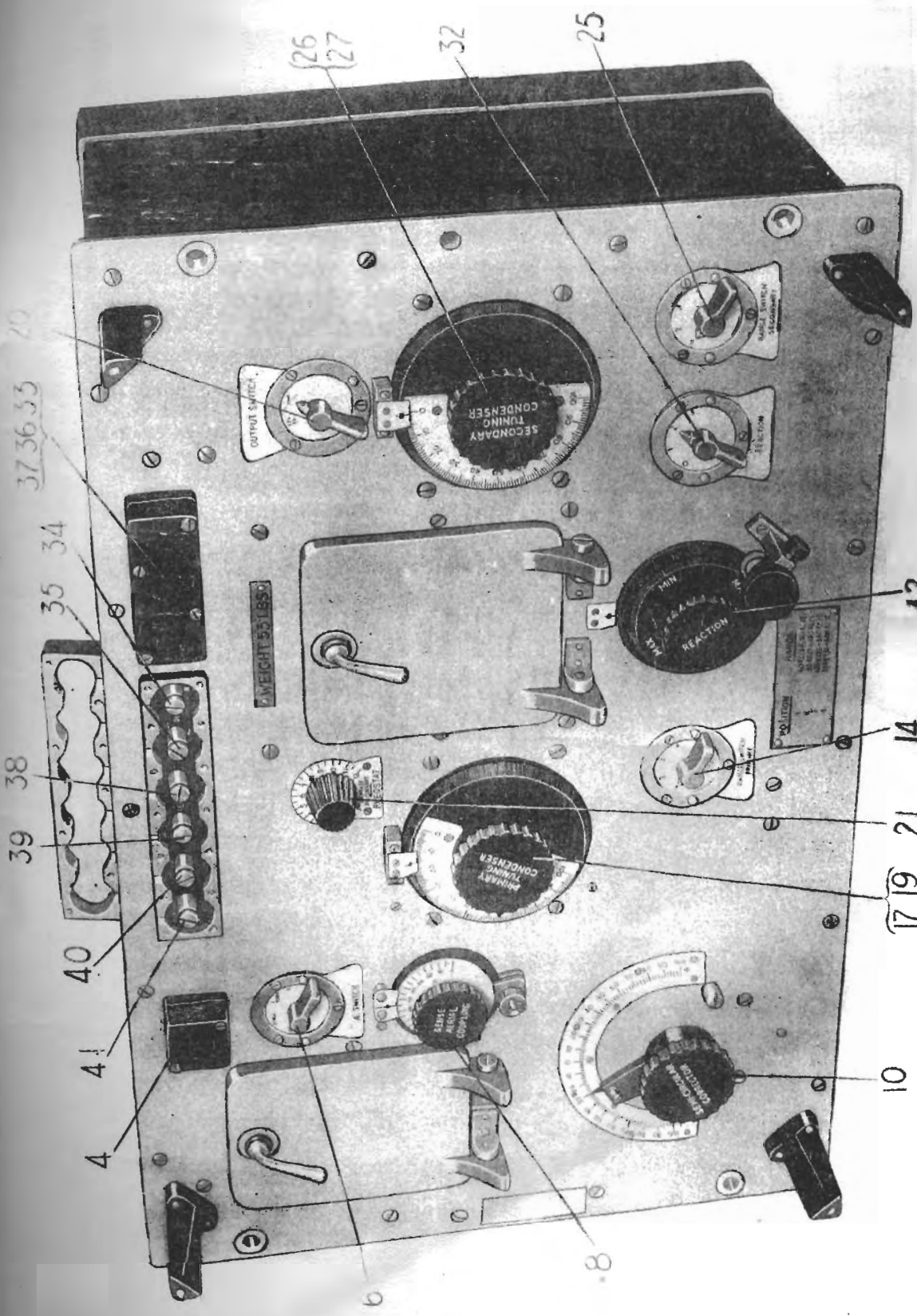
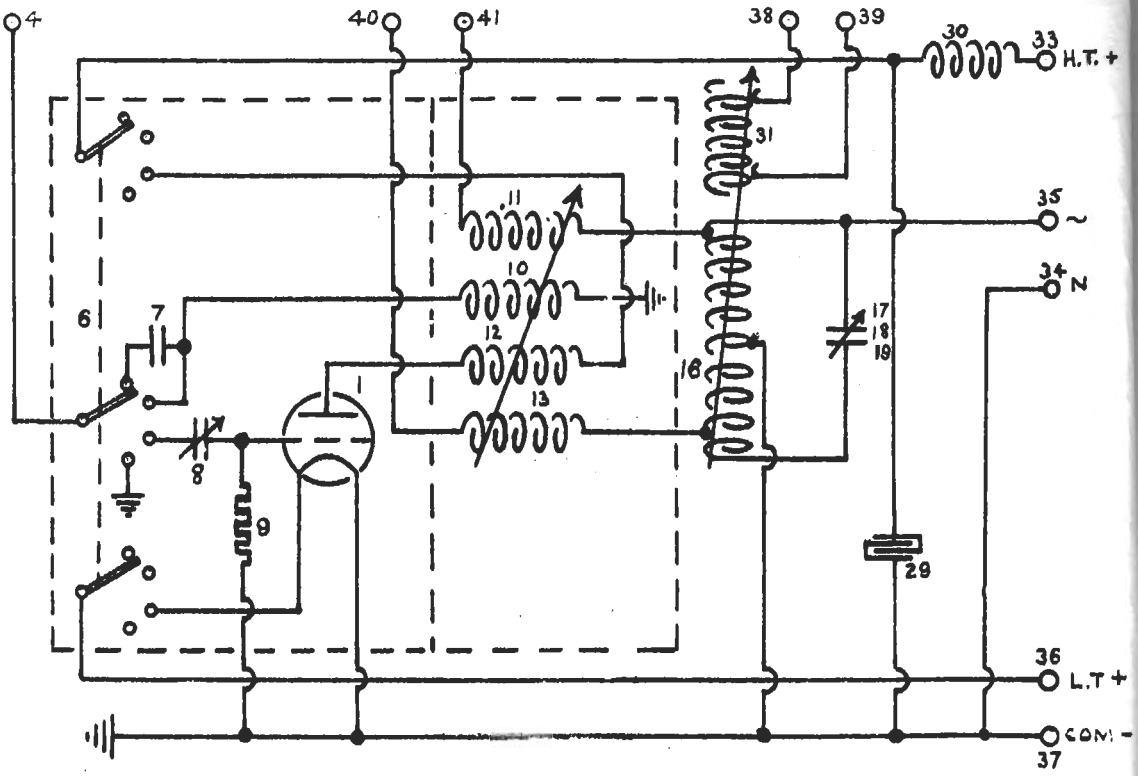


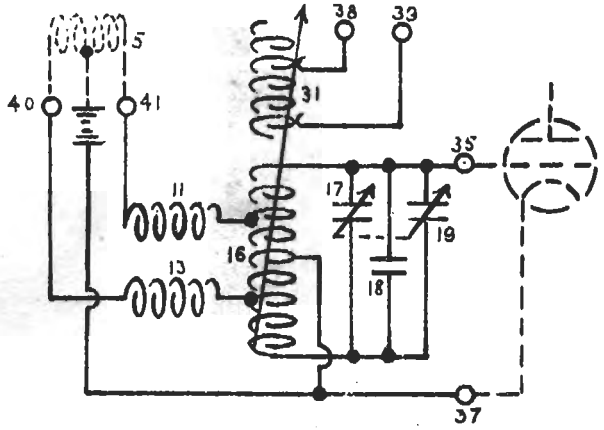
FIG. 15.

TUNER A47

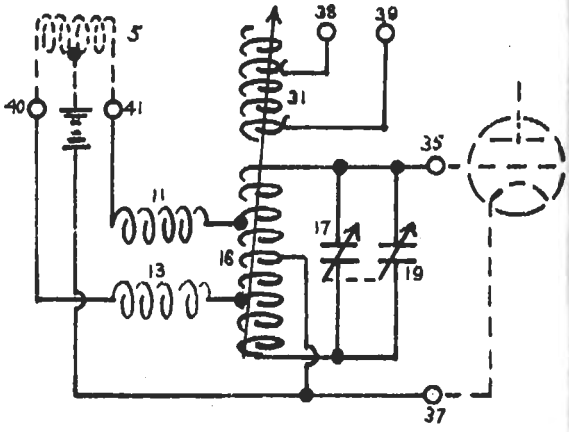
STAND-BY POSITION (RANGES 1 & 2 ONLY)



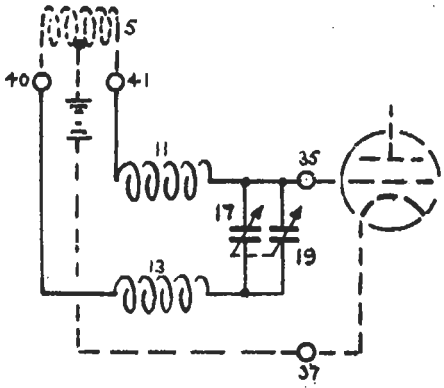
RANGE 1



RANGE 2



RANGE 3



RANGE 4

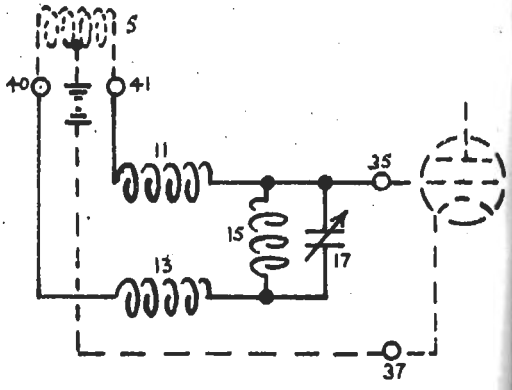


Fig.18.

Tuner A47 is designed for use with D/F outfits where a goniometer is connected to the aerial system. A complete circuit diagram of the tuner is shown in Fig. 14 and photographs in Figs. 15, 16 and 17. Incorporated in the tuner are the sensefinder and semi-circular corrector which are described later.

The output switch (20) has two positions viz :- "Stand-by" and "D/F". The "Stand-by" position facilitates rapid searching for signals as, in this position, adjustments are only required on the primary range switch (14) and primary tuning condensers (17)(19). The variable primary tuning condensers (17) and (19) are ganged and are therefore adjusted by one dial when either one or both of the condensers are connected in the primary circuit by the primary range switch (14).

The primary and secondary range switches (14) and (25) can be switched to four positions, numbered 1 to 4. Both switches should be set to the same range position when the tuner is used in the "D/F" position, and the primary and secondary variable tuning condensers will have approximately the same setting for any frequency. The four frequency ranges are as follows :-

Position 1.	60 to 90	kc/s.
" 2.	90 " 180	"
" 3.	180 " 350	"
" 4.	350 " 600	"

Output Switch (20) in "Stand-by" Position. A circuit diagram of the tuner in the "stand-by" position and equivalent circuits for the four positions of the primary range switch (14) are shown in Fig. 18.

The goniometer search coil (5) is connected in series with the two fixed windings (11)(13) of the semi-circular corrector which form part of the primary circuit. In positions 1 and 2 of the range switch (14) the goniometer search coil (5) and semi-circular corrector windings (11)(13) are connected across the 46 centre turns of the auto-transformer (16) with the centre point earthed. In positions 3 and 4 the auto-transformer (16) is not used.

Primary Range Switch (14) in Position 1. In position 1 of the range switch (14) the whole winding of the auto-transformer (16) is tuned by the two 1-jar variable condensers (17)(19) with the 0.7 jar fixed condenser (18) in parallel.

Primary Range Switch (14) in Position 2. In position 2 of the range switch (14) the auto-transformer (16) is tuned by the two 1-jar variable condensers (17)(19), the 0.7 jar fixed condenser (18) being disconnected.

Primary Range Switch (14) in Position 3. In position 3 of the range switch (14), the two 1-jar variable condenser (17)(19) are connected in parallel with the goniometer search coil (5) and semi-circular corrector inductances (11)(13). The auto-transformer (16) is disconnected and the circuit tuned by the two variable condensers (17)(19).

Primary Range Switch (14) in Position 4. In position 4 of the range switch (14), a 3000 mic. inductance (15) is connected in parallel with the goniometer search coil (5) and semi-circular corrector inductances (11)(13) which are tuned by a 1-jar variable condenser (17).

Fairly good zeros can be obtained when using the tuner in the "stand-by" position. One side of the primary circuit is connected to the input terminal of the Amplifier M9 by the output switch (20). The return circuit is made by the centre point of the auto-transformer (ranges 1 and 2) and the centre point of the search coil (Ranges 3 and 4) being connected to earth.

Output Switch (20) in "D/F"Position. A circuit diagram of the tuner in the "D/F" position is shown in Fig. 19 and equivalent circuits for the four positions of the primary and secondary range switches (14)(25) in Fig. 20.

With the output switch (20) in the "D/F" position additional selectivity is provided by means of a balanced valve circuit which is connected between the primary circuit and the input to the Amplifier M9. This is effected by the output switch (20) which has two contacts. When switched from "stand-by" to "D/F" one contact changes over the connection to the input of Amplifier M9 from the primary circuit to the secondary circuit. The second contact completes the filament circuit for the two valves (2) and (3). On all frequencies the "D/F" position will give an increase of signal strength.

The tuning arrangements of the secondary circuit are controlled by the secondary range switch (25) similar to that in the primary circuit and so arranged that the tunings of the condensers, primary and secondary are as nearly similar as possible. A very slight re-adjustment of primary condenser (17) may be found necessary on switching over from "stand-by" to "D/F" in order to obtain maximum signal strength.

The secondary inductance (24) is tapped for positions of the secondary range switch (25) and arranged to give the whole coil in positions 1 and 2 and the centre 52 turns in positions 3 and 4.

The variable secondary tuning condenser (26)(28) are ganged and are therefore adjusted by one dial when either one or both of the condensers are connected in the secondary circuit by the secondary range switch (25).

Secondary Range Switch (25) in Position 1. In position 1 of the range switch (25) the whole of the secondary inductance (24) is tuned by the two 1-jar variable tuning condensers (26)(28) with the 1.0 jar fixed condenser (27) in parallel.

Secondary Range Switch (25) in Position 2. In position 2 of the range switch (25) the secondary inductance (24) is tuned by the two 1-jar variable condensers (26)(28), the 0-7 jar fixed condensers (27) being disconnected.

Secondary Range Switch (25) in Position 3. In position 3 of the range switch (25), part of the secondary inductance (24), which is tapped to give an equal number of turns from the centre towards the outer ends of the coil, is tuned by the two 1-jar variable condensers (26)(28).

Secondary Range Switch (25) in Position 4. In position 4 of the range switch (25), the same part of the secondary inductance (24) which is used in position 3 is tuned by the 1-jar variable condensers (26). One end of the secondary circuit is connected to the input terminal of the Amplifier M9 by the output switch (20) when in the "D/F" position. The circuit is completed by a connection from the centre point of the secondary tuning coil (24) through a 100-ohm resistance (42) to the input N terminal (34) of the M9.

Autodyne reception may be employed using a reaction coil (31) which can be used either in the "stand-by" or "D/F" position. This reaction coil (31) is fitted centrally inside the auto-transformer (16) and is supplied with a dial (42) marked "Reaction" and a switch (32) marked "Reaction Switch". The reaction coil (31) is arranged in three stages of 4, 12 and 30 turns. The "0" (zero) position of the switch (32) disconnects the coil (31) when it is not required. Positions "1", "2" and "3" of the switch (32) connects in 4, 12 and 30 turns (complete coil) respectively. The "Reaction" dial is fixed to a spindle which revolves the reaction coil for fine adjustment of coupling after the coarse adjustment has been obtained by the "Reaction Switch" (32).

D/F POSITION (RANGES 1 & 2 ONLY).

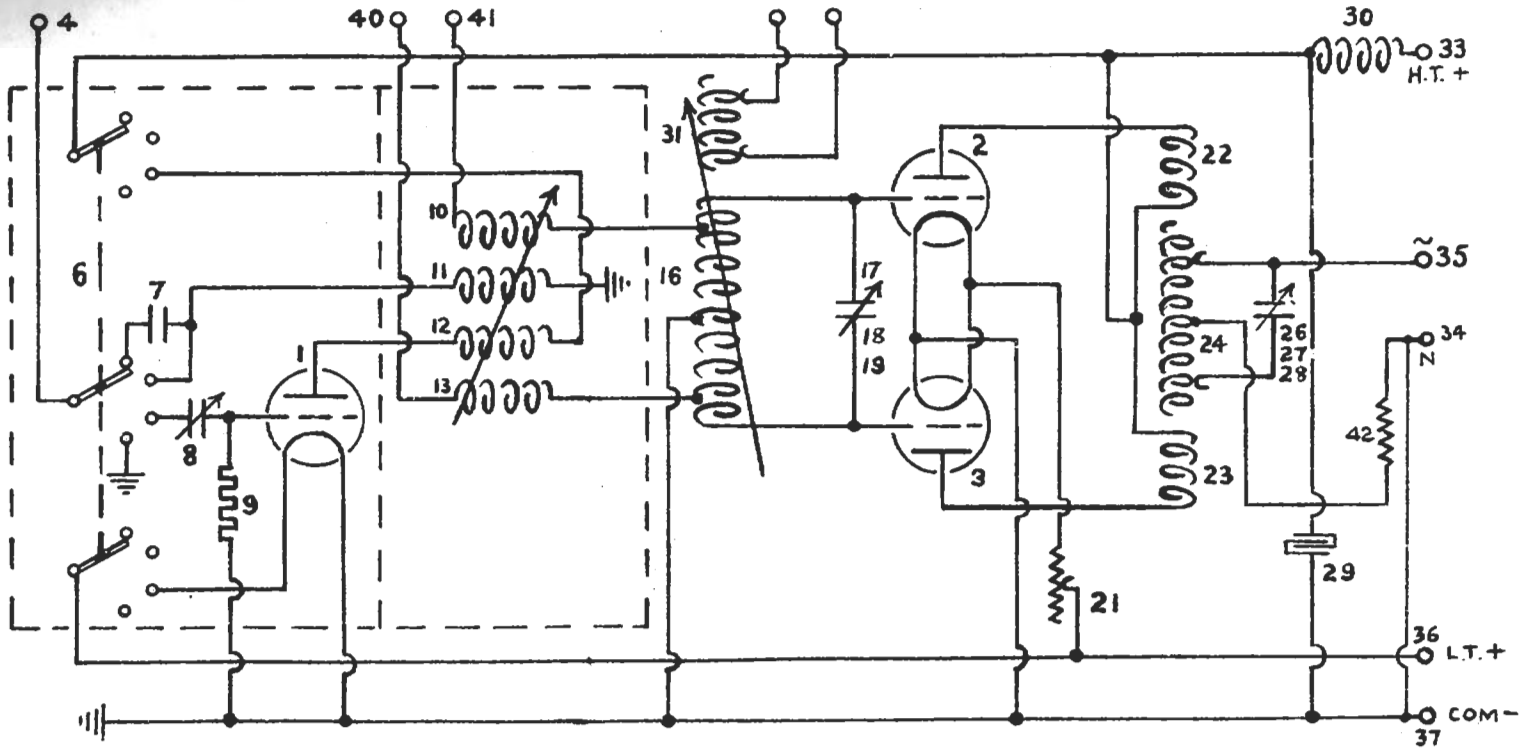
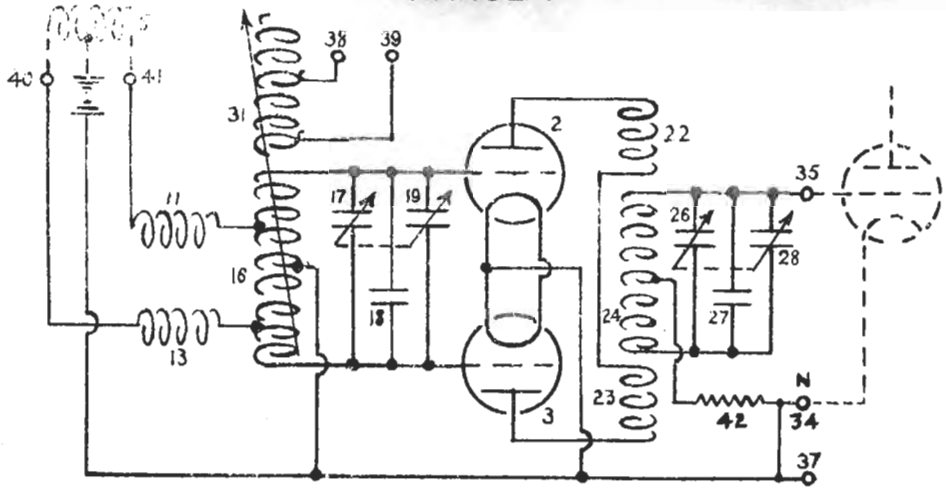


Fig. 19.

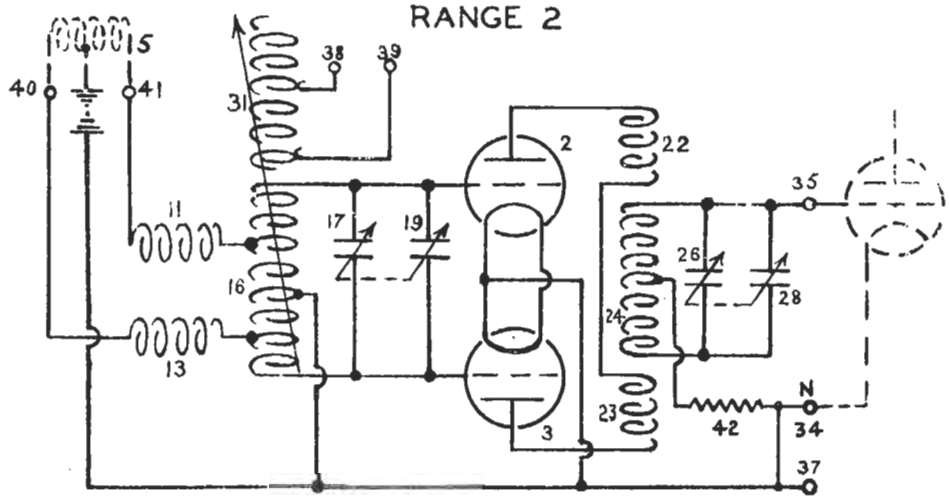
TUNER A47

TUNER A47

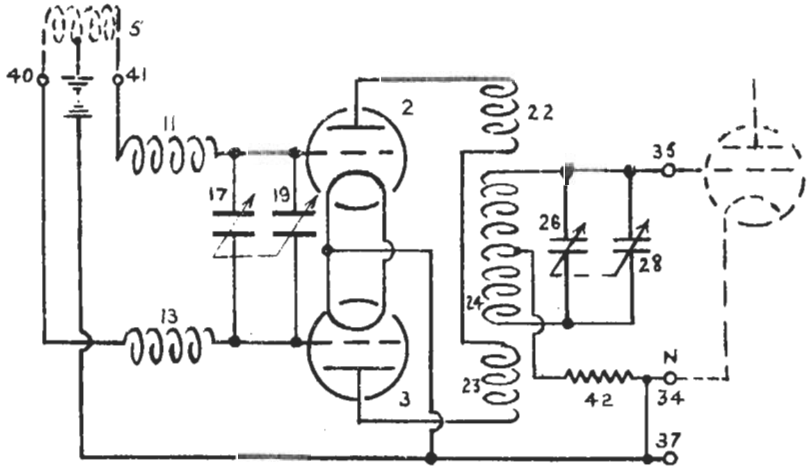
RANGE 1



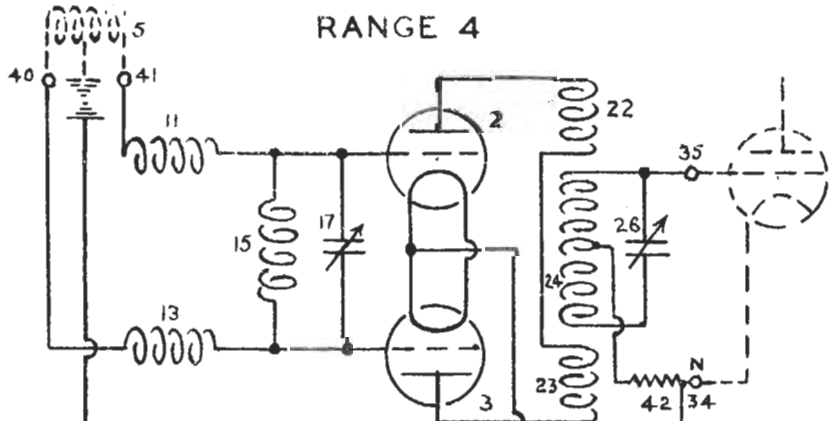
RANGE 2



RANGE 3



RANGE 4



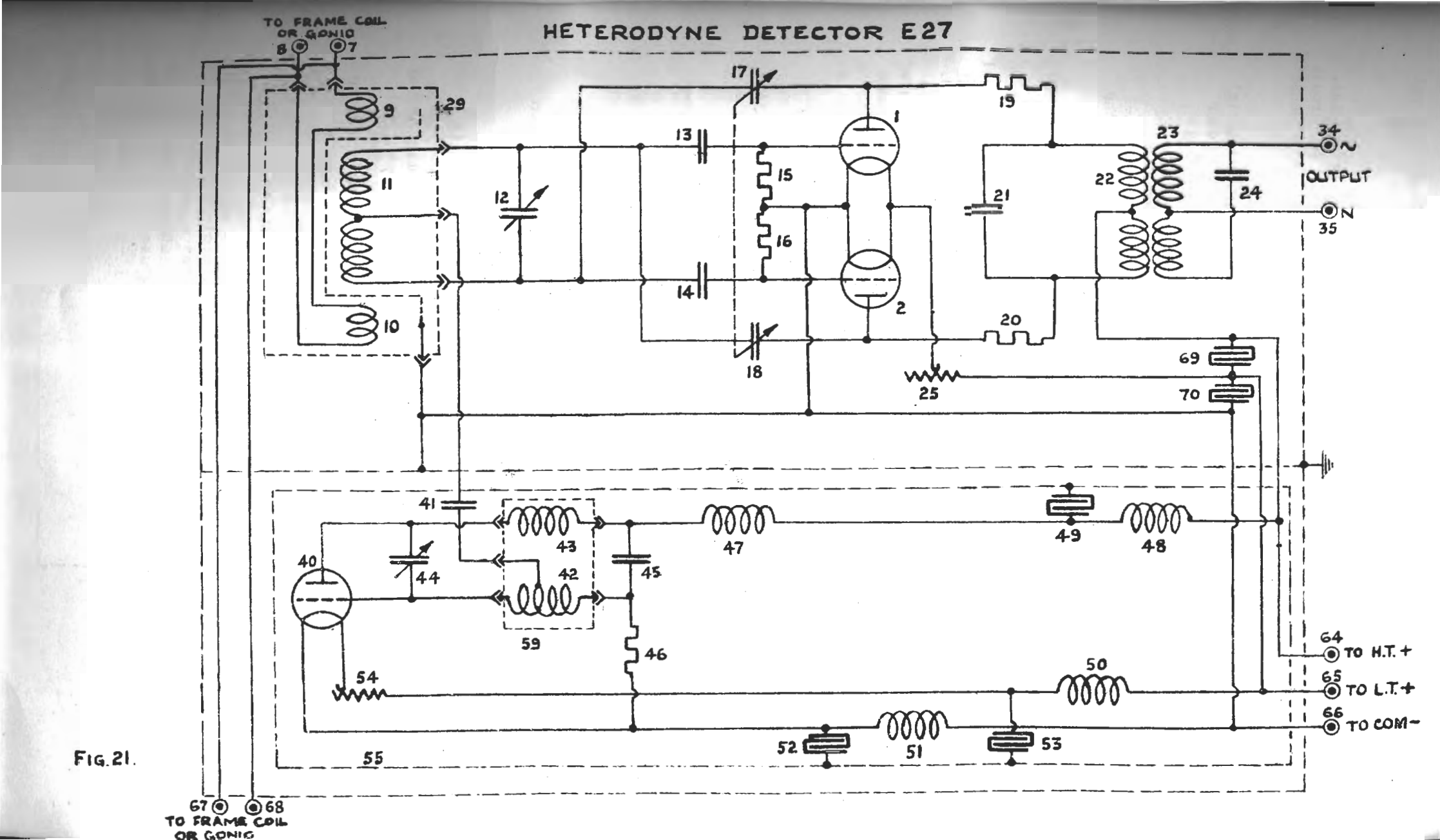

HETERODYNE DETECTOR E27
TO FRAME COIL OR GONIO
8
7
9
29
11
10
12
17
13
14
15
16
18
1
2
19
20
21
23
22
24
34
N
OUTPUT
N
35
25
69
70
41
43
42
44
45
40
47
49
48
59
46
54
50
64
TO H.T.+
65
TO L.T.+
66
TO COM-
52
51
53
55
67
68
TO FRAME COIL OR GONIO

FIG. 21.

It should be noted that, as the auto-transformer (16) is not in circuit of ranges 3 and 4 of the primary range switch (14), reaction is only obtainable on ranges 1 and 2.

A separate single wire aerial is used as the "sense" aerial. The sensefinder and semi-circular corrector are connected in circuit in the tuner by the aerial switch (6) which is marked "D/F", "Sense" and "Corr.1" or "2".

With the aerial switch (6) in the "D/F" position the aerial is disconnected from the sensefinder and semi-circular corrector circuits and earthed, ordinary bearings and reciprocals being obtained.

With the aerial switch (6) in the "Sense" position the aerial is connected to the sensefinder circuit, the switch on the "Switch Unit for Panel, D/F" being switched to "ON". A small variable condenser (8) is used to control the signal strength in the sensefinder valve (1).

The method of using the sensefinder is as follows :- When a bearing, or its reciprocal, has been obtained with the aerial switch (6) in the "D/F" position, the field coils (1)(2)(3)(4) of the goniometer are brought to rest on one of the minimum positions. The aerial switch (6) is then moved to "Sense" when louder signals will be obtained. The aerial series condenser (8) is then adjusted to give approximately the same signal strength as would be obtained with the goniometer field coils in the position of maximum signal strength. If the signals decrease in strength when the field coils are rotated in a clockwise direction, the minimum on which the pointer rested indicates the true bearing of the station.

With the aerial switch (6) in either 1 or 2 "Corr." position the semi-circular corrector is brought into use, the sense aerial being connected to the primary coil (10) of a variable mutual inductance, and thence to earth. A 0.2 jar condenser (7) is connected in series with the aerial in "Corr.2" position. The frequencies on which "Corr.2" position should be used are given in the "Report of Calibration".

The corrector windings (11) and (13), which form the secondary of the mutual inductance, are connected in series with the goniometer search coil (5) and tuner circuit. The purpose of the semi-circular corrector is to convert blurred minima into true zeros.

The method of using the semi-circular corrector is as follows :- Bearings are first taken with the aerial switch (6) in the "D/F" position and, having obtained a minimum, the aerial switch (6) is moved to "Corr." with the pointer of the semi-circular corrector in the "0" position. If a blurred minimum is obtained, this can be converted to a true zero by adjusting the coupling, at the same time keeping the goniometer search coil (5) trained on the bearing. A value of coupling (in one direction or the other) should quickly be found where blurring is reduced and it should be a question of careful adjustment of coupling and training only to obtain a perfect zero.

When a zero has been obtained by use of the semi-circular corrector it will be found that blurring of the reciprocal has increased. It must not be inferred, however, that a perfect zero obtained by this method gives the sense of the station. This type of semi-circular corrector is not capable of being used as a sensefinder.

The series condenser (7) which is used in "Corr. 2" position, is provided for use with large aerials which may -

(a) Give too strong signals or.

(b) Come into resonance within the range of the frequencies 60-600 kc/s.

If signals are too strong the coupling in the corrector may be too critical and by inserting a series condenser in "Corr. 2" position the signals will be reduced to a suitable strength.

If the sense aerial circuit comes into resonance within the frequency range of the tuner the current passing down the aerial will not be in the correct phase for the semi-circular corrector to operate. By switching to "Corr. 2" position a 0.2-jar condenser (7) is connected in series with the sense aerial circuit and so prevents the aerial circuit coming into resonance within the frequency range 60 to 600 kc/s.