

BATTERIES.

Pattern	Maker.	Nominal		Max. discharge amps.	Max. charge amps.	Normal charge amps.	Specific Gravity.		First charge amps.
		Ampere Hours	Rate Hours				Charged	Discharged	
5530	Various	400	5	240	180	65	1215	1160	15 for 40 to 80 hours. - do -
5532		250	5	150	80	41	1215	1160	
7541		D.P. Battery Co	220	5	51	76	38	1280	
7541	Chloride Elec. Storage Co.	220	5	51	76	38 (Max 15 when gassing)	1280	1140	- do -
6038	Fuller's Accumulator Co.	110	10	-	12	6	(Block type now obsolescent).		
6038A	D.P. Battery Co	110	10	15	20	11	1220/5	1175/80	11
6038A	London Battery & Cable Co.	110	10	18	20	11 (Reduce to 7 gassing)	1250	1180	11 for 36 to 40 hours.
5503	Various.	42	5	-	12 (earlier cells 5 & 3-1/2)	6			
1551A	Fuller's Accumulator Co.	20	5	6.5	2.5	2.0 (approx.)	1220	1170	1.25 Block Type. Obsolescent.
1551B	D.P. Battery Co	20	5	4	3	3 (Reduce to 2 gassing)	1240	1160	2 for 38 to 40 hours.
1551B	Fuller's Accumulator Co.	20	5	4	3		1250	1125	2.5 for 35 to 40 hours.
1551B	London Battery & Cable Co.	20	5	4	3		1240	1160	1.25 for 50 to 60 hours.
*6035A	(Obsolescent).								
6035B	Edison Swan Co	3.0	30	0.2	0.2	0.1	1280	1160	0.2 for 50 hrs.
6035B	London Battery & Cable Co.	3.0	(1)30 (11)15 (2) types)	0.2	0.1-0.25 (See labels on cells)	0.1	1250/80	1160	0.2 for 40 to 50 hours.
6035B	Premier Accumulator Co.	3.0	30	0.2	0.2	0.1	1280	1160	0.2 for 50 hrs.
4976 (Inert)	Require priming before use. Discharge through 250 ohms will not fall below 1 volt in 70 days at 60° F.								

(For densities on first filling see labels on cells.)

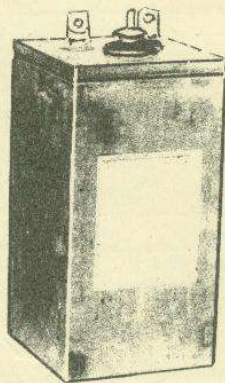
* Ebonite containers. φ Glass containers.

† These figures are approximate only and should not be exceeded.

12 cells Pattern 6035 when connected together in a box make up one battery Pattern 6034.



PATTERN 5530



7541



6038A



5503



1551B



6035B

4976

SUB-SECTION **NB** BATTERY OUTFITS

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BATTERY OUTFITS.

The outfits of stores for batteries and their charging arrangements are classified independently of both transmitting and receiving outfits. They are distinguished by three letters, the first of which is "B". The second letters run concurrently in the order in which they are allocated. The third letters appear in brackets and indicates the voltage of the H.T. Battery used, in Roman numerals. Thus battery outfit BD(C) has a 100 volt H.T. Battery whilst battery outfit BD(L) has a 50 volt H.T. Battery.

Battery Cupboards are designated by two letters, the second being in brackets and representing the H.T. Battery voltage as in Battery Outfits e.g., Battery Cupboards J(C) and J(L).

Particulars of Battery Outfits are as given below. Diagrams of charging arrangements will be found in the figures mentioned in the first column. In all cases Batteries Pattern 8034A/B or C are used for supply to the Anodes of receivers.

FIG.	BATTERY OUTFIT.	BATTERY CUPBOARD	PATT. OF CELLS.			CHARGING OF FILT. BATT.	REMARKS.
			RECR. FILT.	TRANSMR. FILT.	20V BATT.		
b & d	BA	D	6038A 6V or 4V		1551B	Boards 2F and 1 Generator.	Type 43 alone—Bright valves (6V) or converted to dull (4V).
-	BB						
h & i	BC	D	6038A 6V or 4V		1551B	20 V. mains.	Type 2 ^o -34 & 71 or 71 alone Bright 6V. Dull 4V.
f & g	BD	F	6038A 4V		1551B	Boards 2G and 2 Generators.	Type 36S. Type 45 Aux. of Heavy Ships. Dull only.
j, k, l	BE	G	6038A 6V or 4V	6038A 6V	1551B	20 V. mains.	Type 37 in Second Office 6V Bright. 4V Dull.
m	BF	E	6038A 4V	6038A 6V		100 V. mains.	Type 44. Dull only.
f & g	BG	D	7541 6V or 4V		1551B	Boards 2G and 2 Generators.	Type 36S, 36, 45 & 38. Bright 6V. Dull 4V.
-	BH						
-	BI						
e	BJ	C	7541 6V or 4V	7541 6V	1551B	100 V. mains.	Type 37 with common W/T & A/S battery. 6V Bright 4V Dull.
m & n	BK	C	6038A 6V or 4V	6038A 6V	1551B	100 V. mains.	Type 37 old standard 6V Bright. 4V Dull.
-	BL	D (if any)	7541 6V or 4V			Boards 2L and 2G. 2 Generators.	S/M "X.1" Bright 6V. Dull 4V.
b & c	BM	H (if any)	5593 4V			Boards 2K & 2F 1 Generator.	Type 47. Dull only.
b & c	BN	D	7541 6V or 4V			Boards 2K & 2F 1 Generator.	SGX. 6V Bright. 4V Dull.
-	BO						
j, k, l	BP	G	5503 4V	5503 6V	1551B	20 V. mains.	Type 37 in 2nd. Offices. Dull only.
e	BQ	H	5503 4V		1551B	20 V. mains.	Type 45 Cruisers. Second Offices of Ships other than Type 37. Dull only.
e	BR	H	5503 4V			20 V. mains.	SGX. Dull only.
m	BS	E	6038A 4V	6038A 6V	1551B	100 V. mains.	Type 37 in Destroyers. Dull only.
q	BT	D	6038A 6V or 4V		1551B Ex. set (10V)	100 V. mains.	Destroyers without 37 but with CW. recr. 6V Bright 4V Dull.
m	BU	G	5503 4V	5503 6V		100 V. mains.	Type 37 in net-layer. Dull only.
b & c	BV	D	6038A 6V or 4V			Boards 2K & 2F 1 Generator.	Types 151, 81, 47, 39X, 83 alone 45/1 alone 3D alone. 6V or 4V. Type 81 to remain 6V. vide A.F.O. 2363/29.
a	BW	H	5503 4V		1551B	100 V. mains.	Type 38. Dull only. Type 37S in Sloops, etc.
p	BX	J	1551B 4V		1551B	100 or 220 V. mains.	Type 43 alone. Dull only.
p	BY	J	1551B 4V			100 or 220 V. mains.	SD, 31, 45/1. Dull only.
r	BZ		6038A 6V			Gen. & separate apparatus.	SA, etc., in subs. the anode will be from mains.

BATTERY OUTFITS.

NB3

CHARGING BOARDS:— These boards are constructed in two halves, the upper containing the instruments and controlling the distribution, and the lower containing battery charge-discharge switches and generator starters. The boards are of various types depending on the capacity of the filament battery and whether 20 volt circuits are required.

Boards 2G and 2F have an upper and a lower half but ~~2K~~^{2L} and ~~2E~~^{2K} have an upper half only and are combined with 2G Lower and 2F Lower respectively.

2F upper. One filament generator. 20 volt circuits.

2F lower. Filament and Anode batteries charge-discharge switches. One filament generator starter.

2G upper. Two filament generators. 20 volt circuits.

2G lower. Filament and Anode batteries charge-discharge switches. Two filament generator starters.

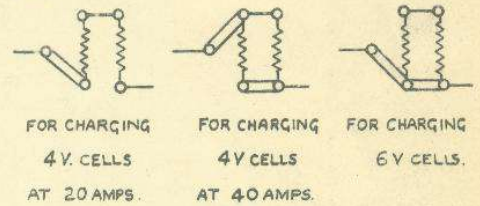
2K upper. One filament generator. No 20 volt circuits.

2L upper. Two filament generators. No 20 volt circuits.

In boards upper, link arrangements (38) must be set according to ship's voltage.

Reverse Current Switches (15)(20)(39) are fitted where the voltage from which the battery is being charged is comparable with that of the battery (see page NC2).

Modern type charging generators are 600 watt machines. The old type are 300 watt and usually have links and resistances situated in the top of the generator casing to regulate the output. When replacing bright emitter by dull emitter valves care must be taken to set these links as shown:—



The following diagrams and photographs illustrate the various charging arrangements fitted.

Red has been used for distinguishing Anode Battery charging circuits and black for Filament Battery charging circuits. 20-volt circuits are shown in green. The numbers on each diagram correspond, e.g., in all cases 31 and 32 show the Anode Battery charge discharge switches and the Reverse Current Switches always carry the identity numbers (15)(20)(39).

BATTERY OUTFIT BW.

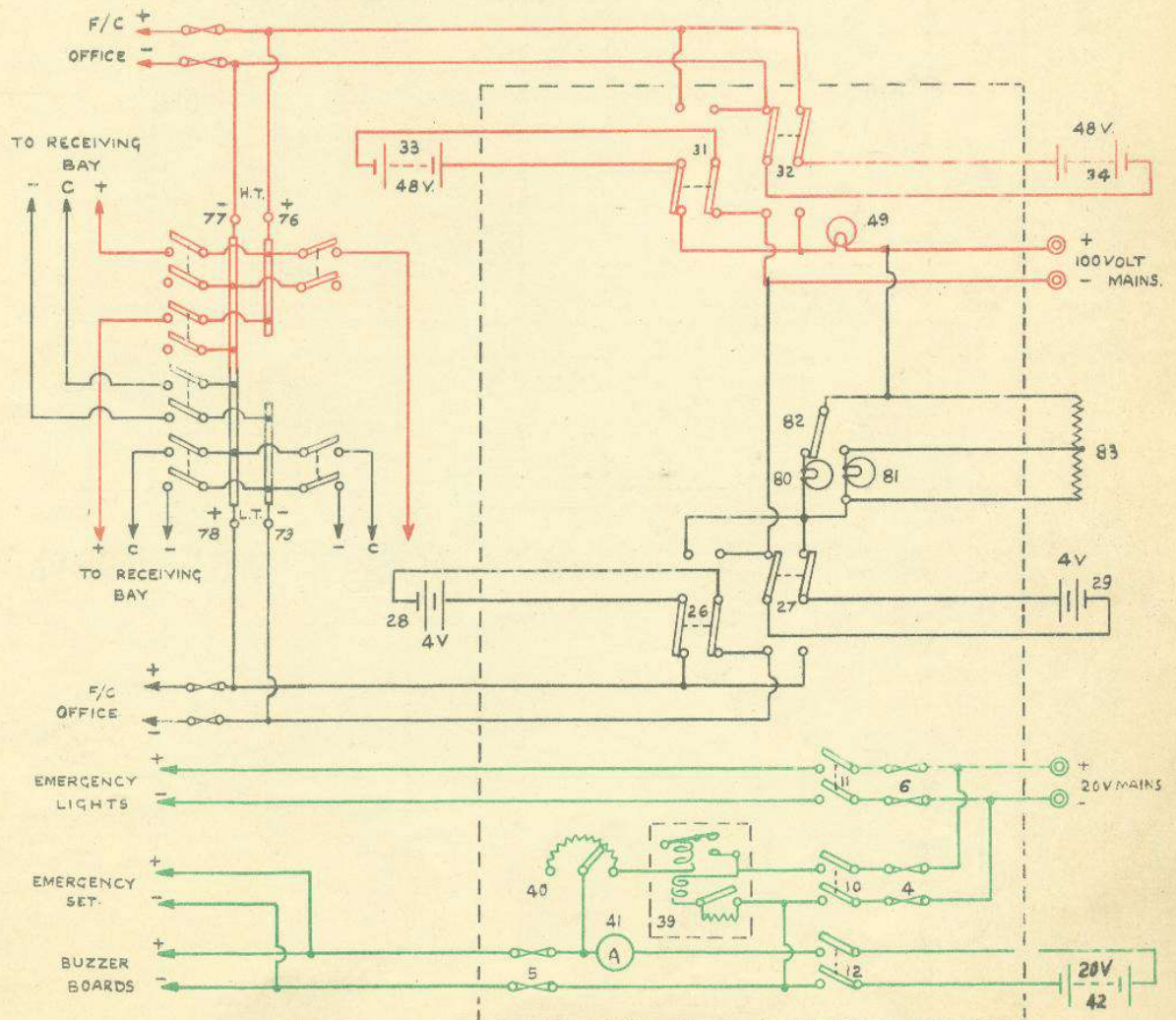


Fig. a.

BATTERY OUTFITS BA, BM, BN, BV.

NOTE:- FIG. 6. SHOWS
 BOARDS 2F CHARGING
 UPPER & LOWER AS FITTED
 IN BATTERY OUTFIT BA.
 BOARD 2K CHARGING
 UPPER IS FITTED IN LIEU
 OF BOARD 2F CHARGING
 UPPER IN BATTERY -
 OUTFITS BM, BN & BV.
 THE SKETCH IS THE SAME
 AS FOR BA OMITTING
 THE 20 VOLT CIRCUIT
 (SHOWN IN GREEN).

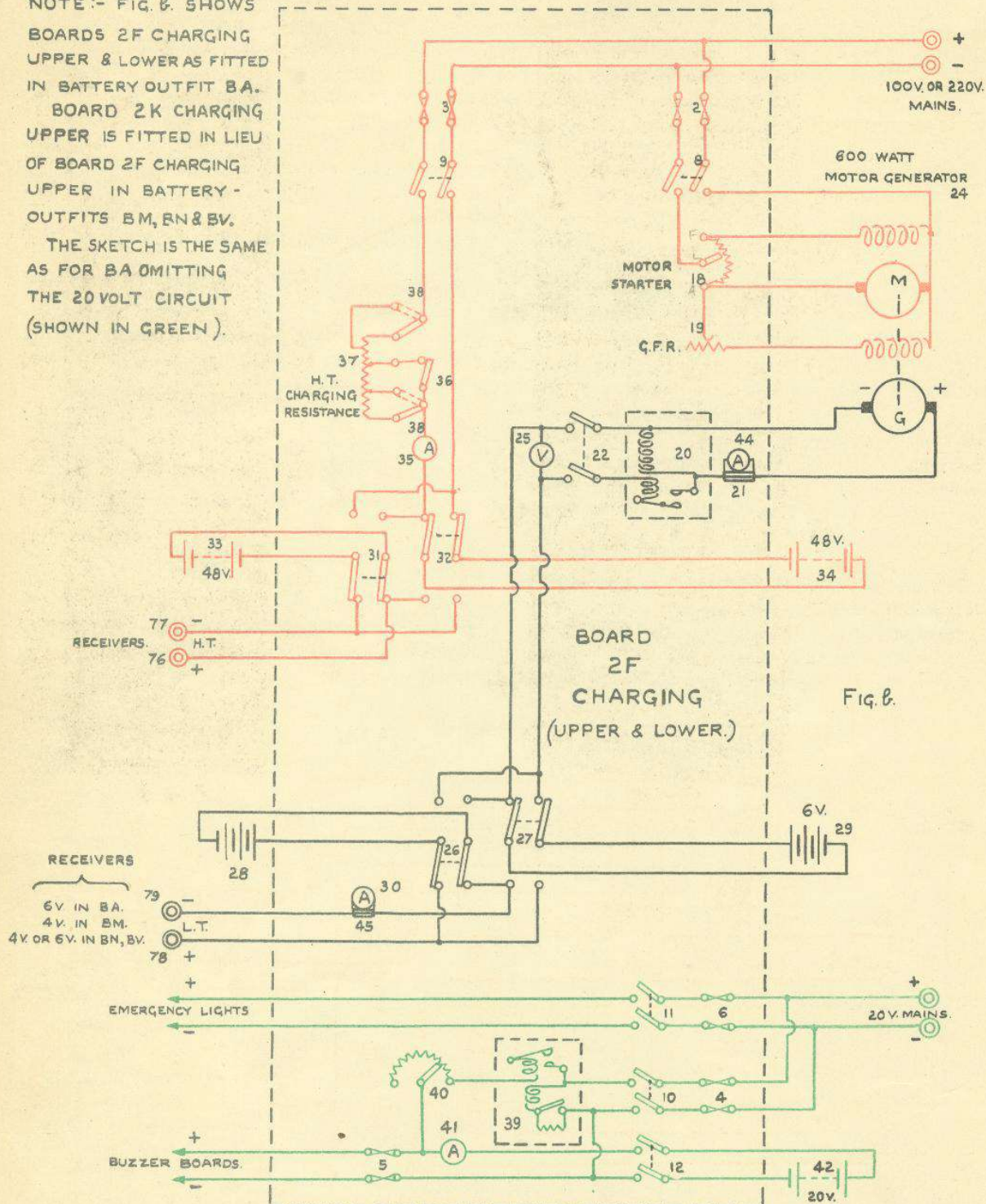
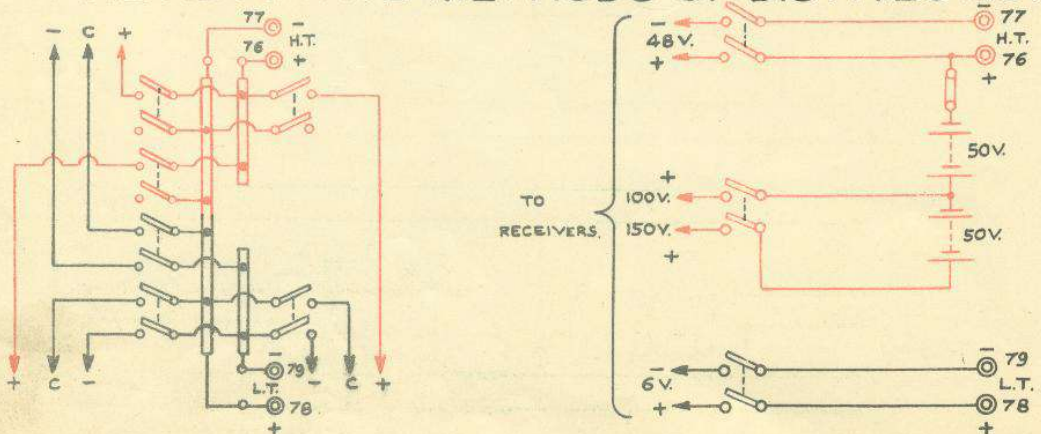


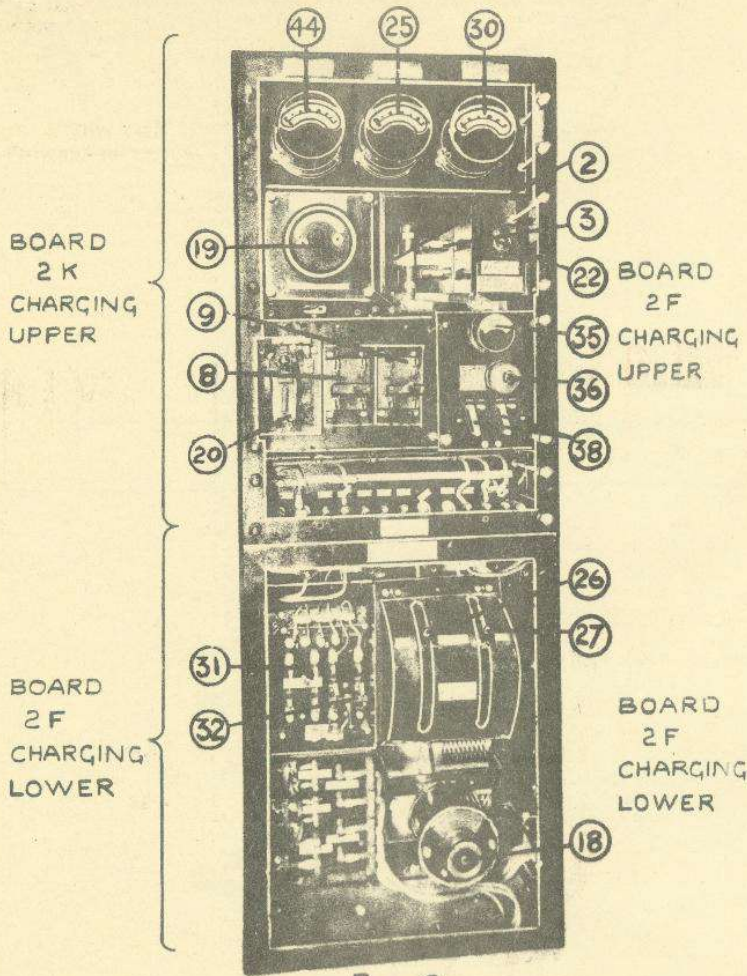
Fig. 6.

ALTERNATIVE METHODS OF DISTRIBUTION.

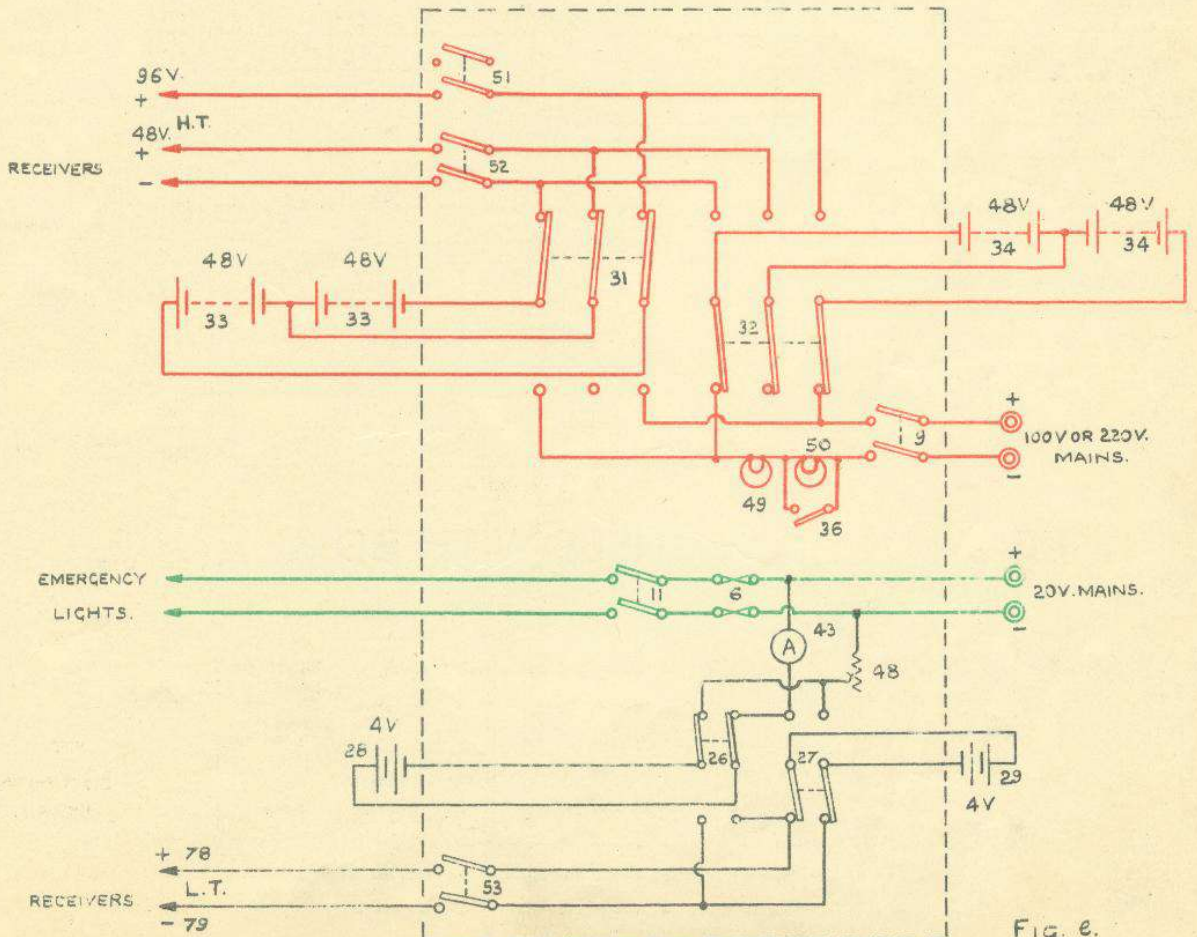
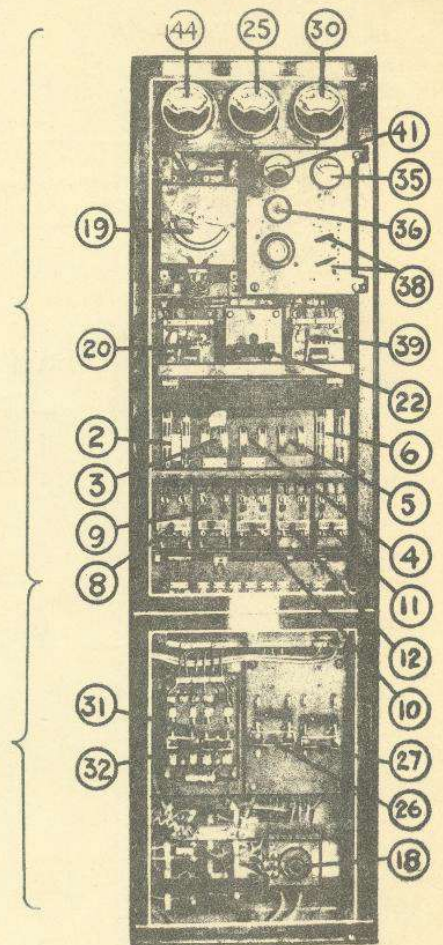


BATTERY OUTFITS BM, BN, BV.

BATTERY OUTFIT BA, NB5



BATTERY OUTFIT BR.



NB6

**BATTERY
OUTFITS
BD & BG.**

600 WATT
MOTOR GENERATOR.

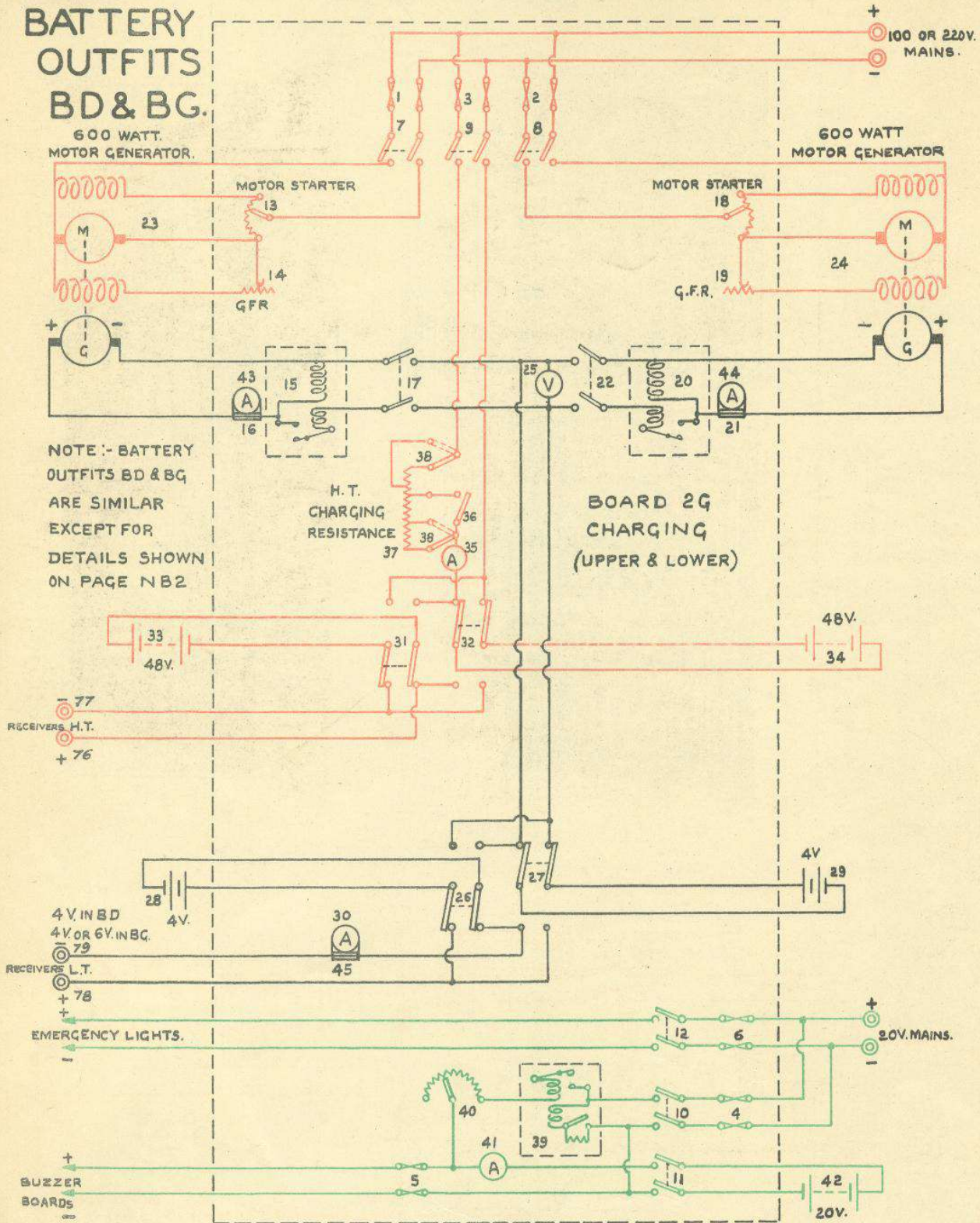
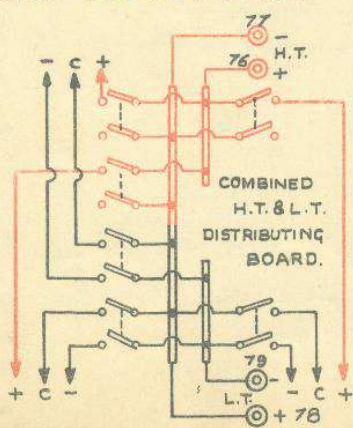
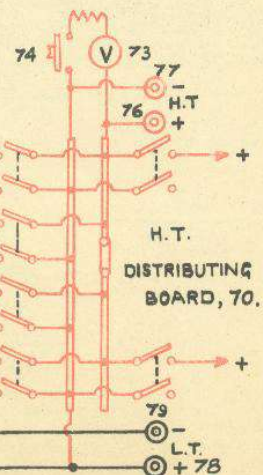
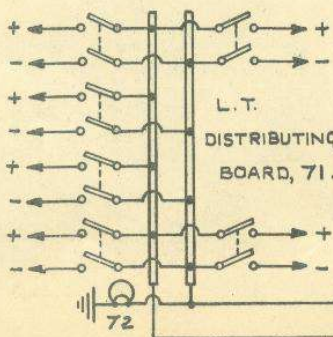


Fig. f.

USED WITH BG.



USED WITH BD & BG.



BATTERY OUTFITS BD, BG.

BATTERY OUTFIT BC.

NB7

P

BOARD
2 G
CHARGING
UPPER

BOARD
2 G
CHARGING
LOWER.

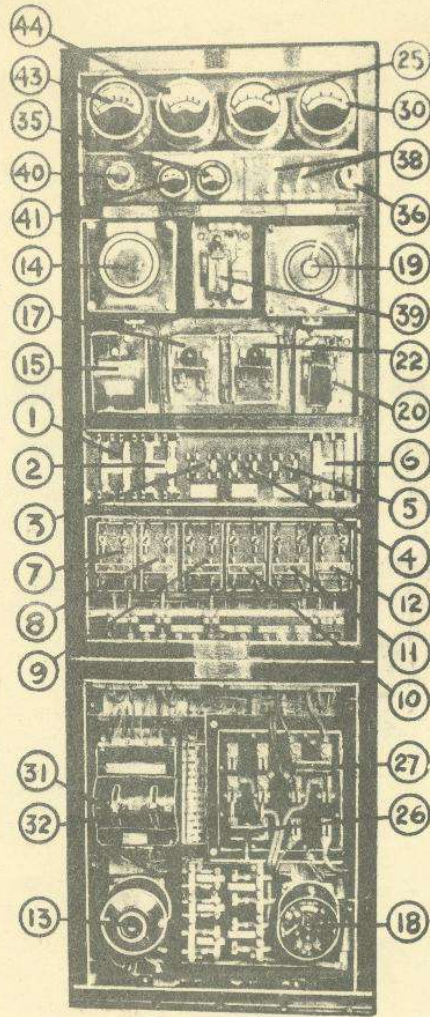


FIG. 9

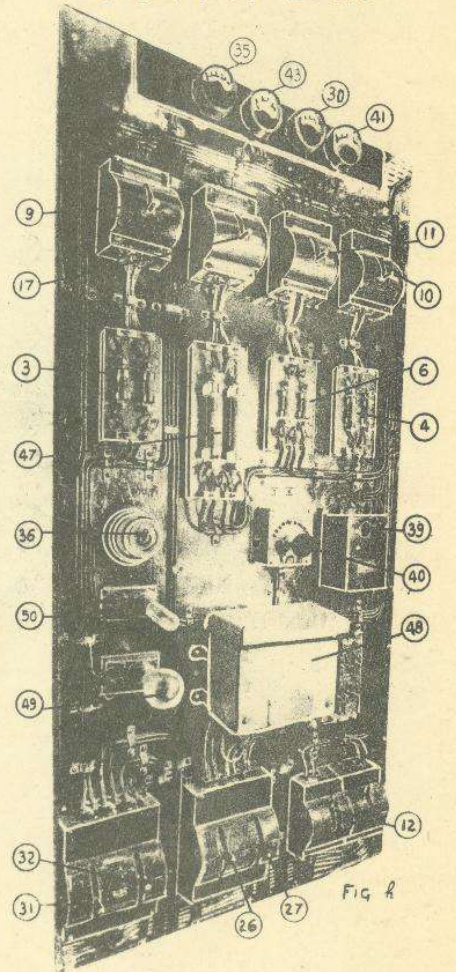


FIG. 8

BATTERY OUTFIT BC.

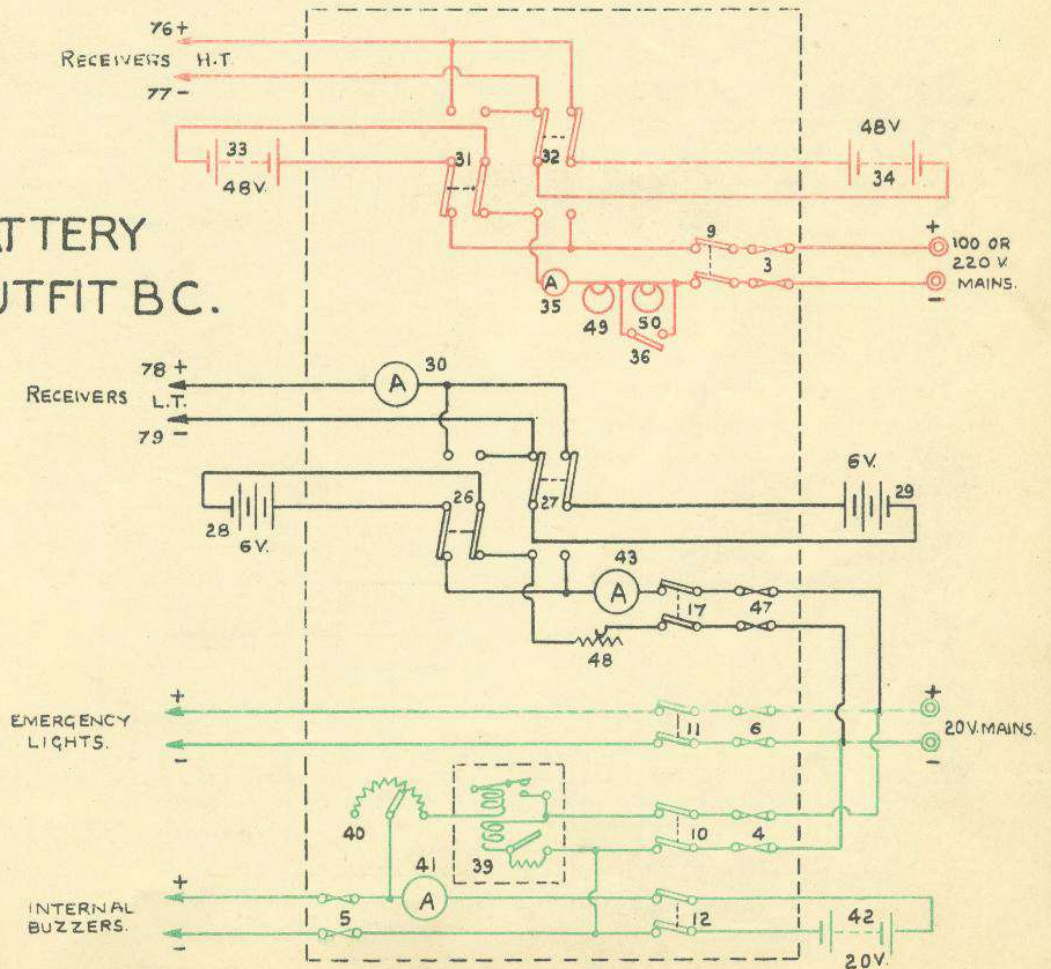
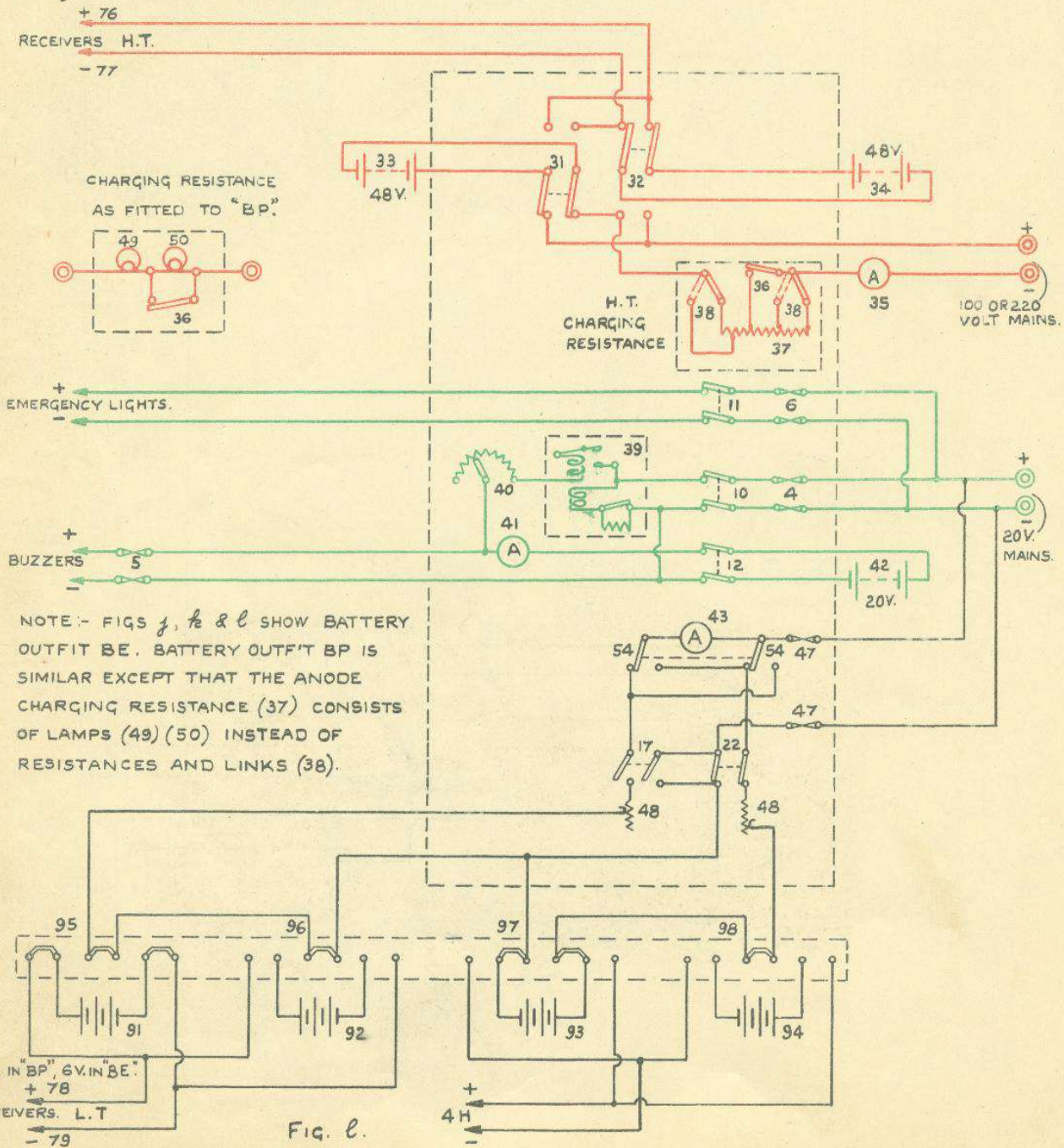
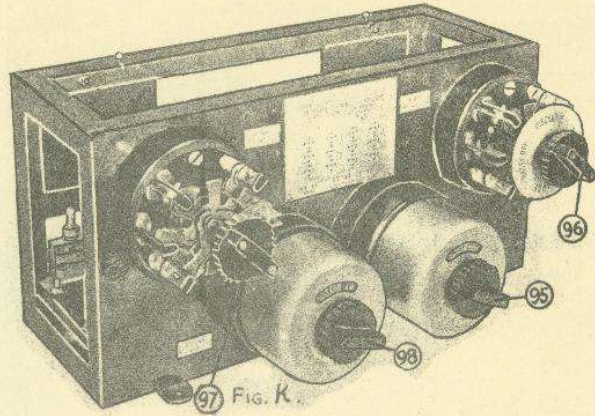
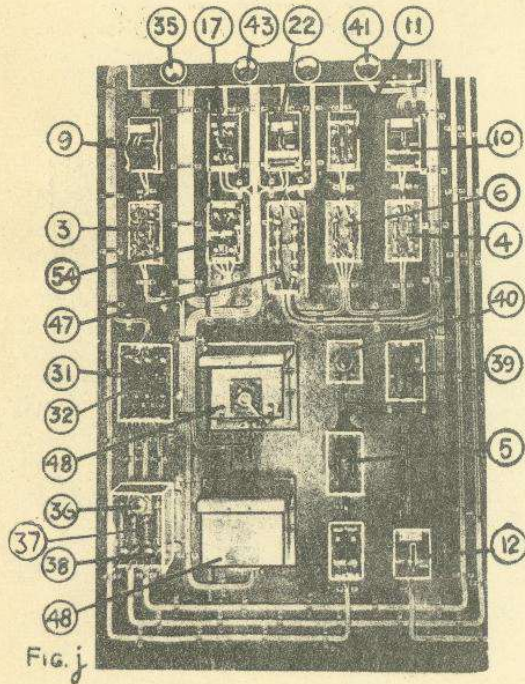


FIG. 4

BATTERY OUTFITS BE & BP



NOTE:- FIGS j, k & l SHOW BATTERY OUTFIT BE. BATTERY OUTFIT BP IS SIMILAR EXCEPT THAT THE ANODE CHARGING RESISTANCE (37) CONSISTS OF LAMPS (49) (50) INSTEAD OF RESISTANCES AND LINKS (38).

Fig. l.

BATTERY OUTFITS BF, BK, BS, BU.

NB9

NOTE:- BATTERY OUTFITS BF & BU HAVE NO 20 VOLT CIRCUITS & BU HAS NO SUPPLY TO REMOTE OFFICES. BF, BEING FITTED WITH TYPE 44 USES BOARD 2L INPUT AND OUTPUT, AND BOARD 2L INSTRUMENT AND FUSE

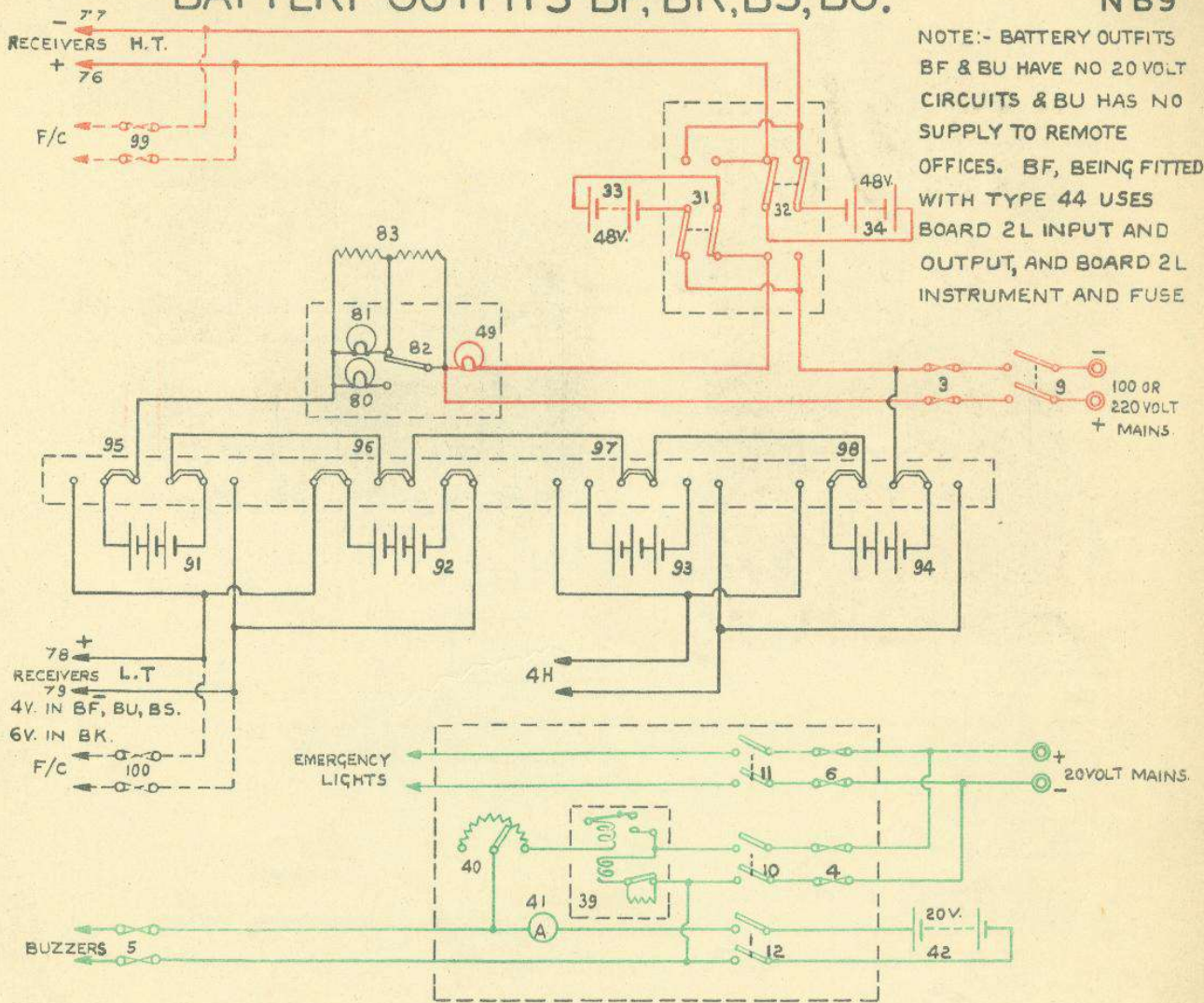


FIG. m.

Care must be taken to see that the anode battery charge-discharge switches (31)(32) are not left to charge when the ship's 100 volt (or 220 volt) power is cut off, as otherwise these batteries will discharge themselves through the mat resistances (83) and any L.T. batteries in the circuit. (Vide A.F.O. 1973/27.)

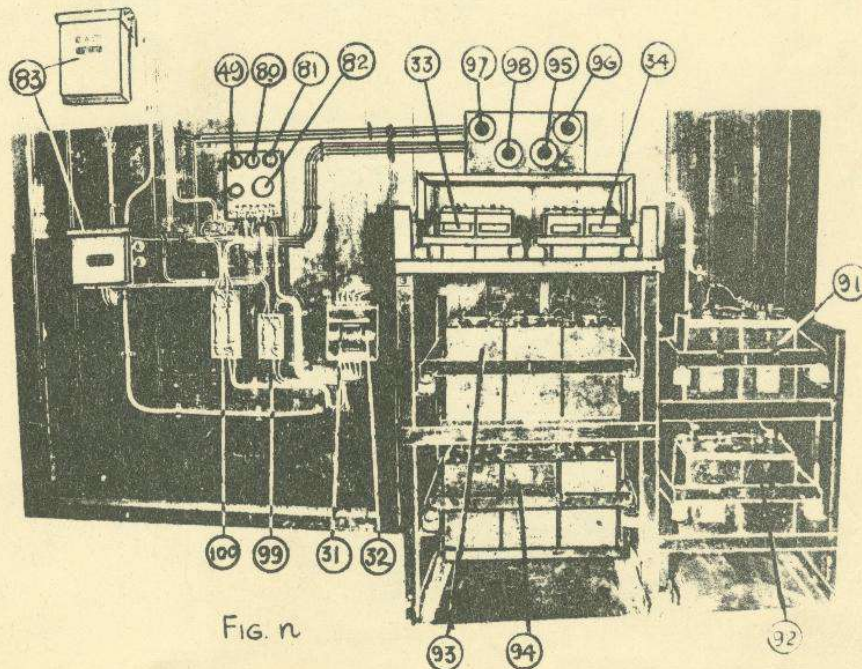


FIG. n

NB10

BATTERY OUTFIT B.J.

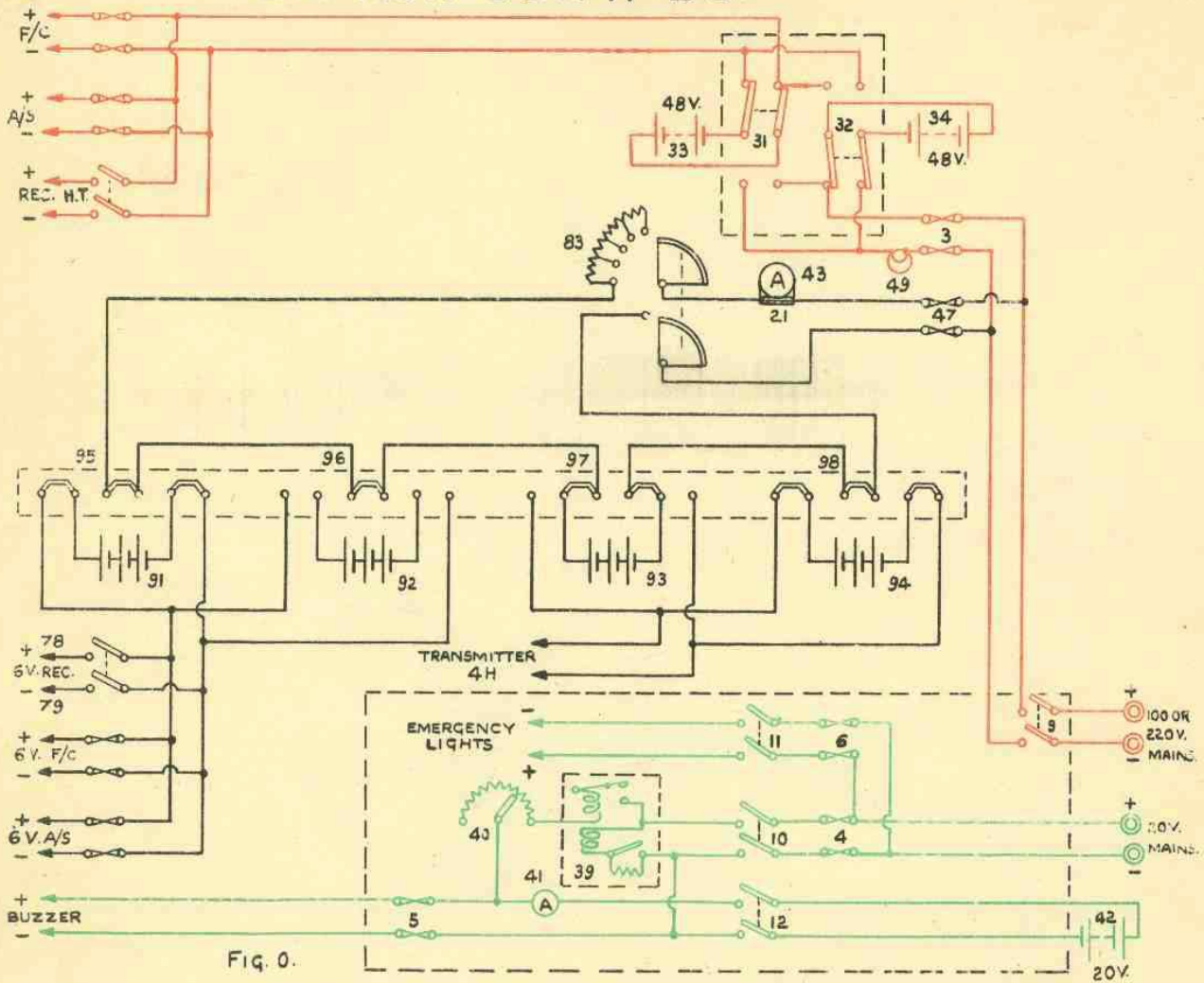


FIG. 0.

BATTERY OUTFITS BX, BY.

NOTE:- BATTERY OUTFIT BY DOES NOT HAVE 20 VOLT CIRCUITS.

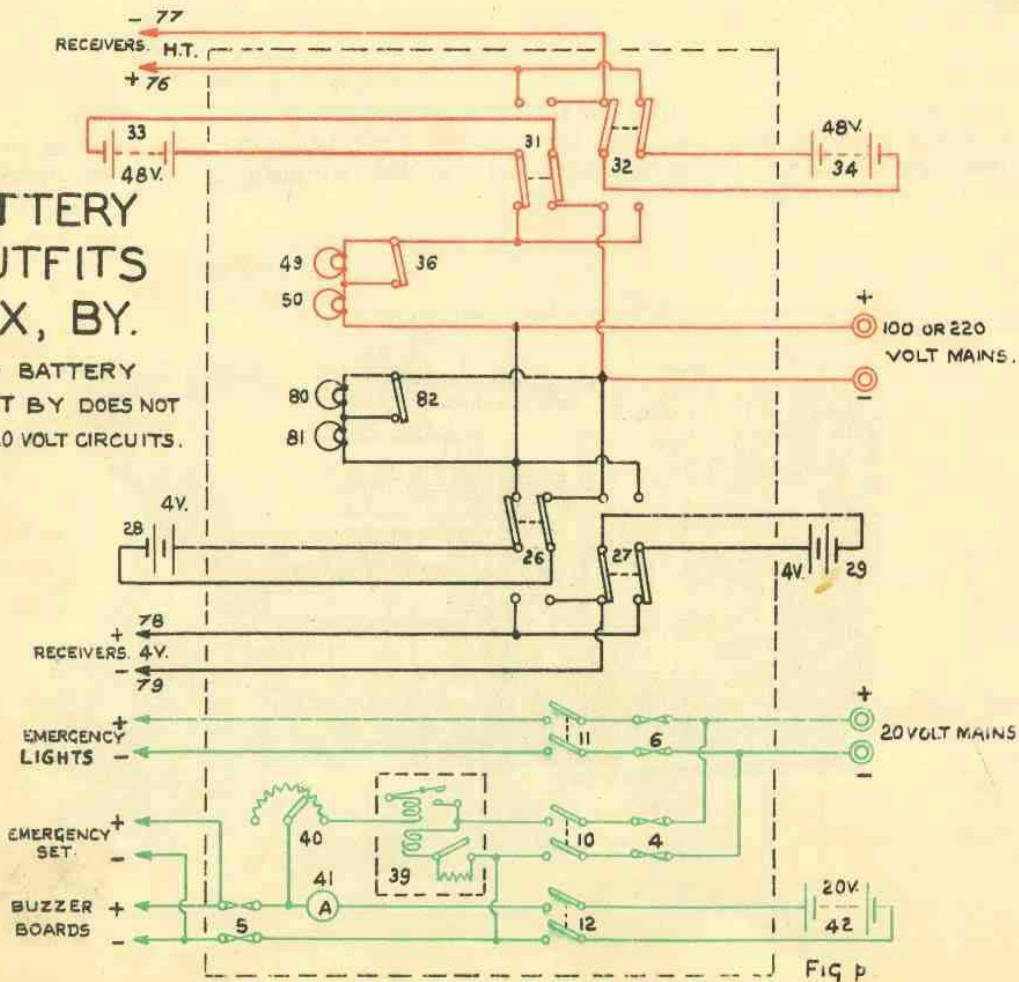
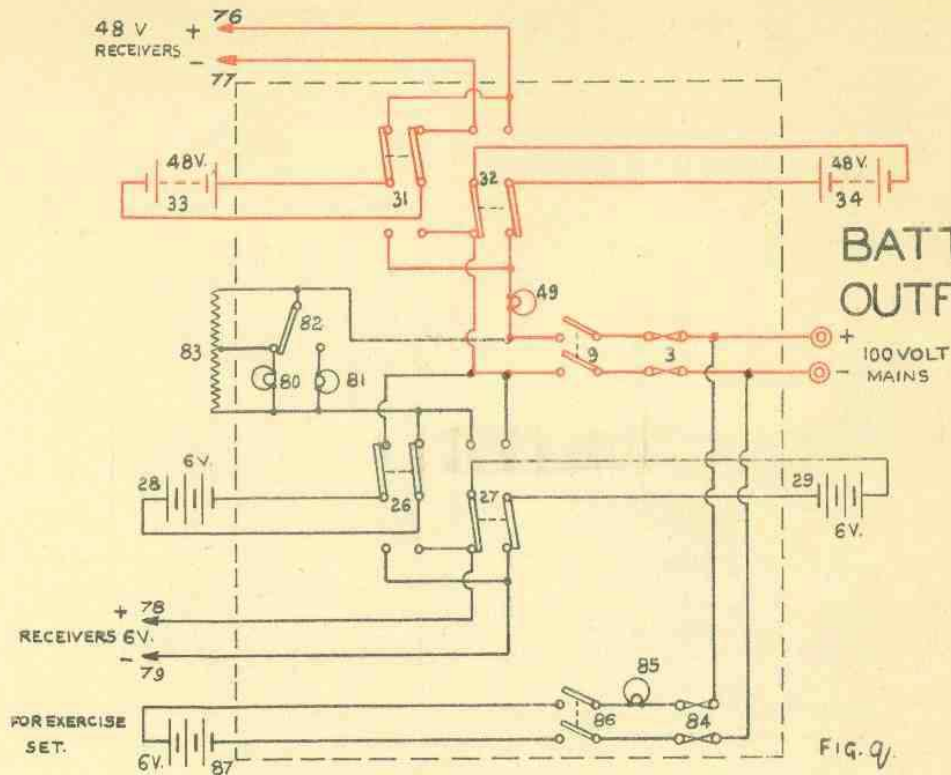
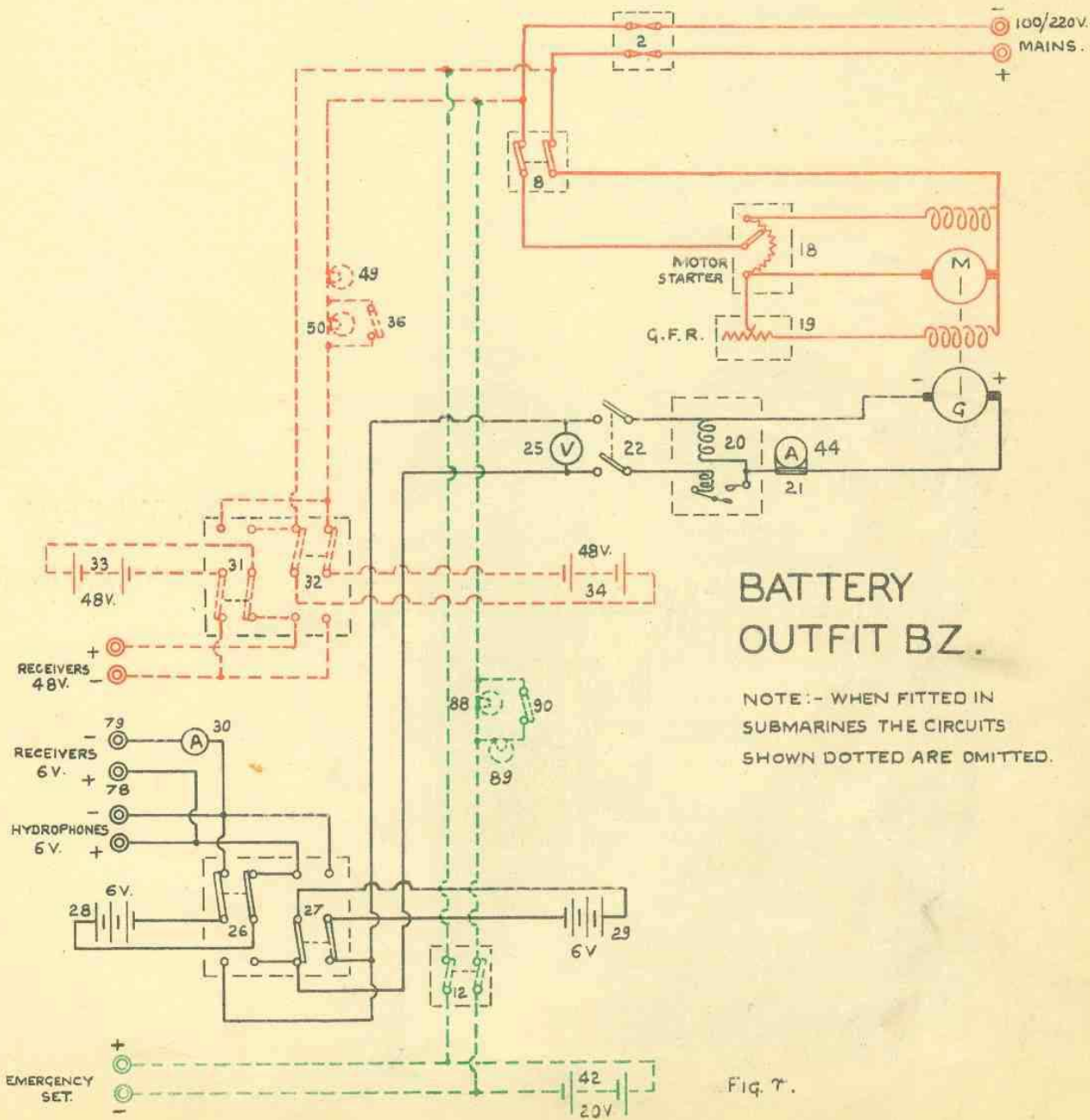


FIG P



BATTERY OUTFIT BT.

Fig. 9.



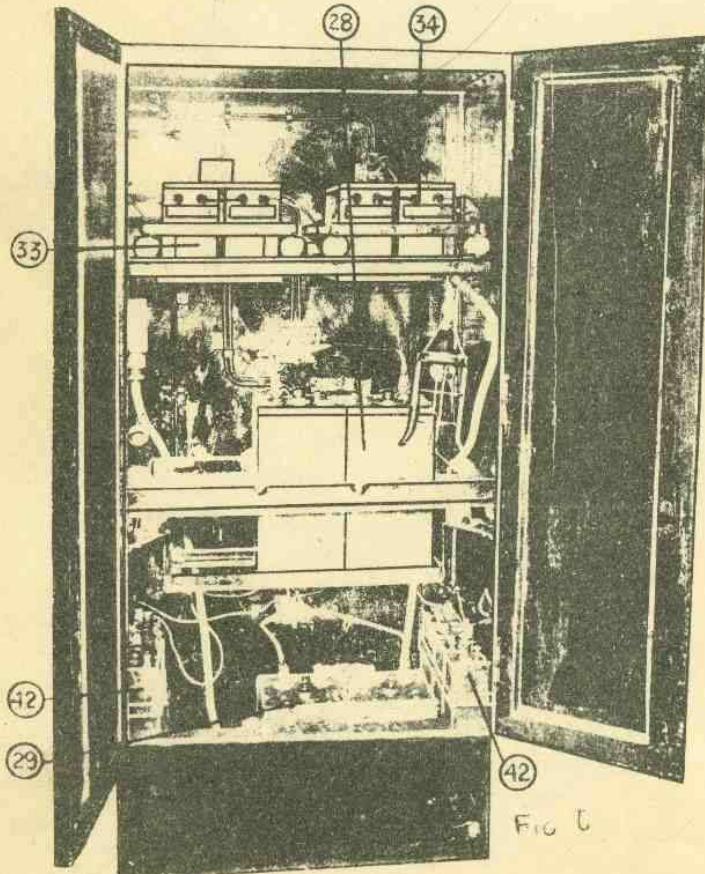
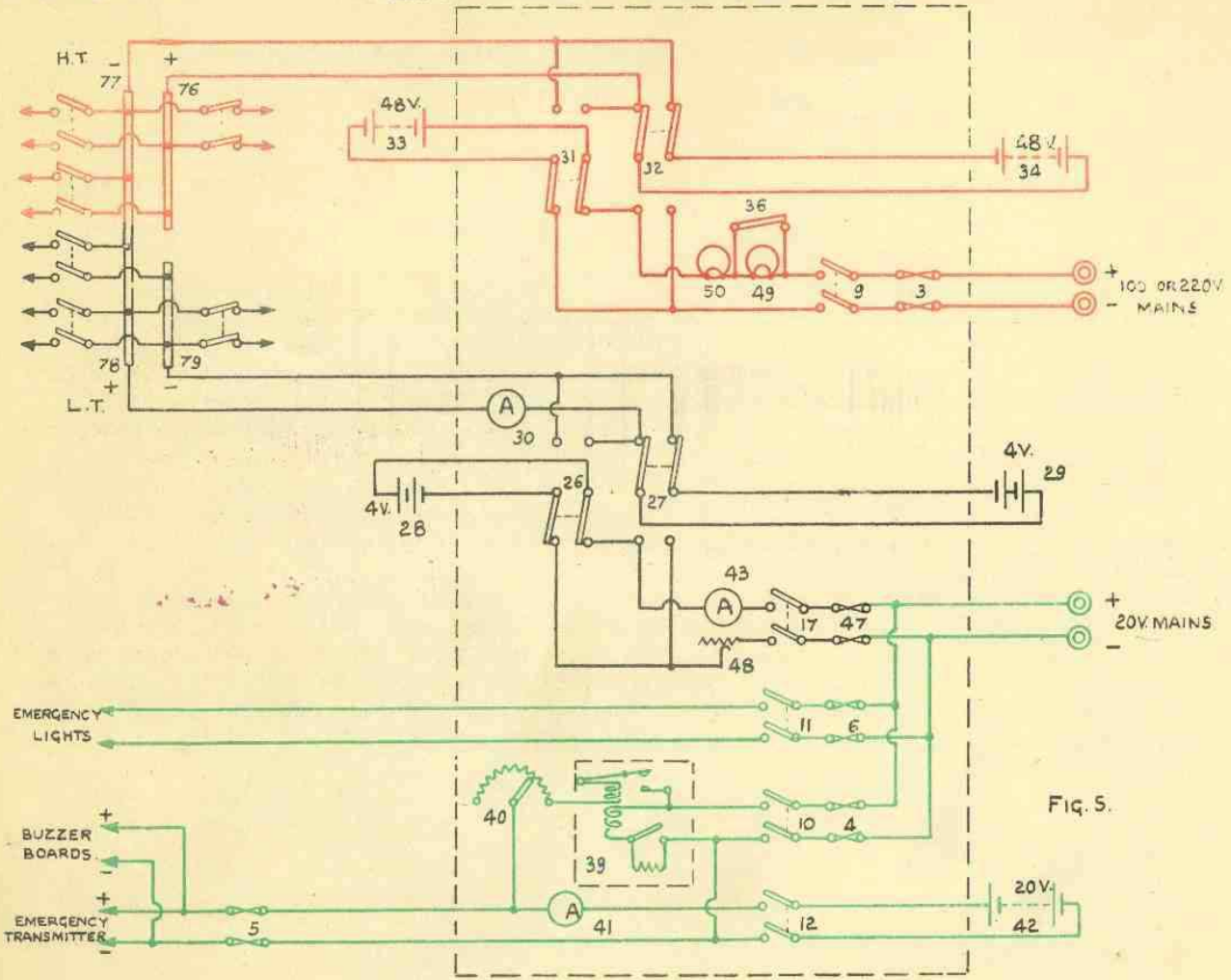
BATTERY OUTFIT BZ.

NOTE:-- WHEN FITTED IN SUBMARINES THE CIRCUITS SHOWN DOTTED ARE OMITTED.

Fig. 7.

NB 12

BATTERY OUTFIT BQ.



BATTERY CUPBOARD F.

BATTERY OUTFITS.

NB13

MODIFICATIONS TO CHARGING ARRANGEMENTS WHEN 100 VOLT BATTERIES ARE FITTED.

Figure u. shows the modifications to wiring involved when converting anode battery systems to give 100 volts. The whole of the existing wiring is not indicated, as it will differ slightly in different battery outfits, such differences, however, being immaterial when wiring up the additional batteries. The switches (31)(32)(99)(100) are so arranged that, when charging, each 100 volt battery will be divided into two 50 volt tanks (33)(33) and (34)(34) in parallel (each with separate charging resistance (49)(104)(105)(106)) and when discharging, the 50 volt tanks (33)(33) and (34)(34) will be in series. A lead taken from the mid point will allow both a 50 volts and 100 volts supply to be available for supplying the receiving instruments.

When existing charging arrangements include either Boards 2F, 2G, 2K or 2L charging, upper, the supply for charging the additional batteries is to be taken from the "dead" side of the anode battery supply switch in the charging board. In other cases the most convenient source of supply in the W/T office is to be used.

The switches (101)(102) will not be required if the anode batteries supply only one receiver outfit, nor if two battery distributing boards are fitted. In the latter case one of the distributing boards is to be used for the filament supplies, and the negative lead from the H.T. supply is to be connected direct to its positive terminal. The other distributing board is to be wired so that each two pole switch has one pole in the positive 100 volt, and the other in the positive 50 volt lead.

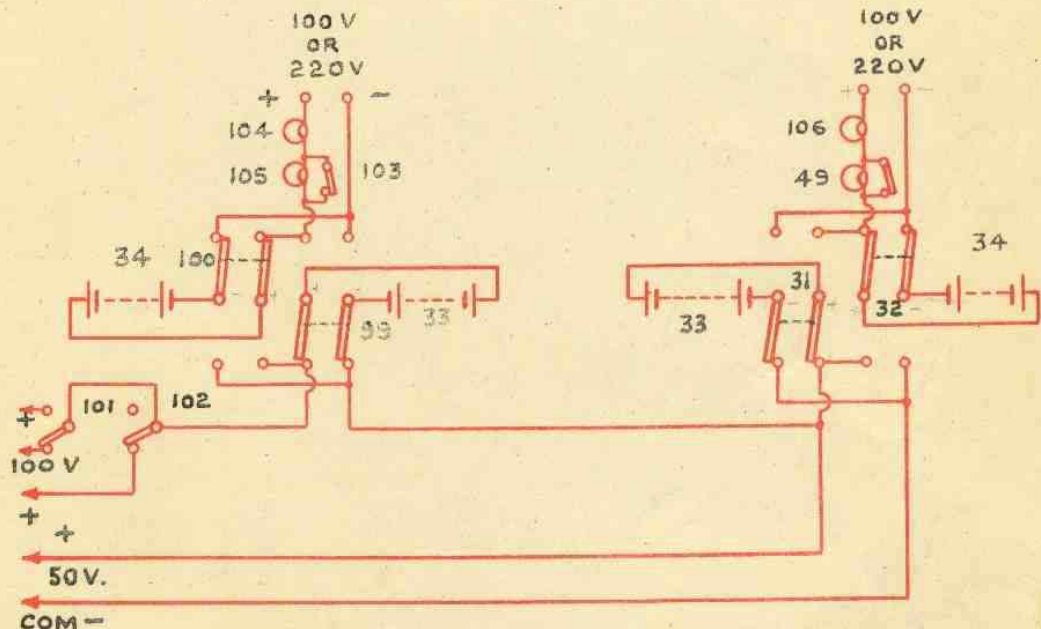


FIG. u

SUB-SECTION

NB

BATTERY OUTFITS

LIST OF BATTERY OUTFITS

PAGE NB2

NB2
1-12-44

BATTERY OUTFITS

Battery Outfit	Receiver H.T. Supply.	Receiver filament Supply.	Transmitter Filament Supply.	Emergency Supply.	Charging.	Where fitted and remarks.
BBa	Duplicate 100 volt 3 amp-hrs	Duplicate 4 volt 40 amp-hrs.			From 20v. Mains or Ships mains.	Second offices with Types 49 or 50. Main offices of Loaders & Destroyers with Type 49.
BBb	Duplicate 100 volt 3 amp-hrs	Duplicate 4 volt 40 amp-hrs.		Single 20 volt 220 amp-hrs.	Board 2T from 20v. battery or ships mains.	Main offices with Type 49 or 50 in ships with battery operated receivers.
<u>BATTERIES.</u>						
BBc	Duplicate 12 volt, 40 Amp-hrs.				From ships mains.	With special sets as and when approved.
BBd	Duplicate 24 volt, 40 amp-hrs.				From ships mains. (80 - 220v.)	With certain Radar sets with 80 - 240v. D.C. supply available.
BBc	Duplicate 24 volt, 40 amp-hrs (single battery, only, carried in ships, other battery in depot ship or shore base where it may be charged and issued as required.)					With certain Radar sets in ships with no charging facilities and no suitable 24 volt supply.
BBf	Duplicate 24 volt, 220 amp-hrs.				Petrol driven generator	With Type 305 in services where no power supply is available.
BBg	Duplicate 12 volt 220 amp-hrs. Duplicate 4 volt 110 amp-hrs.				Petrol driven generator	With Outfit ZC where no power supply is available.
BBh	Duplicate 24 volt 40 amp-hrs.				From ships mains (80 - 240v.)	With certain Radar sets in ships with 80 - 240v. D.C. supplies available.
BBj	Duplicate 24 volt, 144 amp-hrs (single battery, only, carried in ship, other batteries in depot ship or shore base where it may be charged and issued as required.)					With certain Radar sets in ships with no charging facilities and no suitable 24 volt supply.
BBk	Duplicate 6 volt, 85 amp-hrs.				From ships mains (80-240v.)	With receiver outfit QG in ships which have no 230v. 50 cycle single phase A.C. supply available.
BBl	Duplicate 12 volt, 144 amp-hrs.				From ships mains (80-240v.)	With certain Radar sets.
BBm	Duplicate 24 volt, 144 amps-hrs.				From ships mains (80-240v.)	With receiver outfit CAF, CAG or CAH in ships where no suitable 230v. 50 cycle single phase A.C. supply is available.
BBn	Single 24-volt, 144 amp-hrs.					With receiver outfit CAF, CAG or CAH in ships, with a 230v. 50 cycle single phase A.C. supply available.

BATTERY OUTFITS

NB3
1-12-44

Battery Outfit.	Batteries.	Charging	Where fitted and remarks.
BBp	24 volt batteries and charging arrangements	From ships mains 100 and 220v.	With Types 607E and 608E. With Types 608ES and 608EFS.
BBq	Single 24 volt battery Single 4 volt battery	From ships Mains	For use generally in main office of light craft and for BRR/RCO installations when Type 86M is close to the battery. This is common battery for supplying Types 60EQR, Type 86M, Type TV5, Type 252/253 and Receiver Outfit CAF/CAG.
BBr	Single 24 volt battery Single 4 volt battery.	From ships mains.	For use in BRR/RCO installations, for transmitter rooms and 2nd W/T offices of Flotilla Leaders. This is common battery for supplying Type 60 EQR and receiving outfits CAF/CAG.
BBs	Single 12 volt 144 amp-hrs. battery and 12 volt battery charger suitable for 230v. 50 cycle input.		For use with certain Radar equipment.
BBt	Stores comprising the rectifier and emergency battery outfit.		For shore stations fitted with standardised remote control system.
BBu	Single 12 volt 40 amp-hrs.	From ships mains	For Type TCS (operated from 12 volt supply) when fitted as emergency set aft, in light craft.
BBw	Single 24 volt 40 amp-hrs.	From ships mains	For Type TCS (operated from 24 volt supply) when fitted as emergency set aft, in light craft.
BBy	24 volt battery	From ships mains.	For use with Type 602E.