

SUB-SECTION **NB** BATTERY OUTFITS

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CHARGING ARRANGEMENTS FOR 100 VOLT BATTERIES " NB13

## 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 indicate 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 Outboards are designated by two letters, the second being in brackets and representing the H.T. Battery voltage as in Battery Outfits e.g., Battery Outboards J(D) 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 OUTBOARD	PATT. OF CELLS.			CHARGING OF F.I.L.T. BATT.	REMARKS.
			RECV. F.I.L.T.	TRANSMR. F.I.L.T.	20V BATT.		
b & d	BA	D	6038A 6V or 4V		1551B	Boards 2P and 1 Generator.	Type 43 alone-Bright valves (4V) or converted to dull (4V).
-	BB						
h & i	BO	D	6038A 6V or 4V		1541B	20 V. mains.	Type 2P-34 & 71 or 71 alone Bright 6V. Dull 4V.
f & g	BD	F	6038A 4V		1551B	Boards 2S and 2 Generators.	Type 36A. Type 45 Aux. of Heavy Ships. Dull only.
j, k, l	BE	C	6038A 6V or 4V	6038A 6V	1551B	20 V. mains.	Type 37 in Second Office 6V Bright. 4V Dull.
"	BF	E	6038A 4V	6038A 6V		100 V. mains.	Type 44. Dull only. X.
f & e	BD	D	7541 6V or 4V		1551B	Boards 2S and 2 Generators.	Type 36A, 36, 45 & 36. Bright 6V. Dull 4V.
-	BH						
-	BI						
c	BU	C	7541 6V or 4V	7541 6V	1551B	100 V. mains.	Type 37 with common W/T & 6/S battery. 6V Bright 4V Dull.
m & n	BX	G	6038A 6V or 4V	6038A 6V	1551B	100 V. mains.	Type 37 old standard 6V Bright. 4V Dull.
-	BL	C (if any)	7541 6V or 4V			Boards 2L and 2G. 2 Generators.	8/S *X. 2V Bright 6V. Dull 4V.
o & p	BV	H (if any)	5593 4V			Boards 2K & 2F 1 Generator.	Type 47. Dull only.
y & z	BN	D	7541 6V or 4V			Boards 2K & 2F 1 Generator.	6GX. 6V Bright. 4V Dull.
-	BO						
j, k, l	BP	G	5503 4V	5503 6V	1551B	20 V. mains.	Type 37 in 2nd. Office. Dull only.
e	BO	H	5503 4V		1551B	20 V. mains.	Type 45 Cruisers. Second Offices of Ships other than Type 37. Dull only.
o	BP	H	5503 4V			20 V. mains.	8GX. Dull only.
u	BS	E	6038A 4V	6038A 6V	1551B	100 V. mains.	Type 37 in Destroyers. Dull only. X
v	BT	D	6038A 6V or 4V		1551B Ex. 101 (10V)	100 V. mains.	Destroyers without 37 but with CV. recv. 6V Bright 4V Dull.
n	BU	B	5503 4V	5503 6V		100 V. mains.	Type 37 in net-layer. Dull only.
b & c	BV	J	6038A 6V or 4V			Boards 2K & 2F 1 Generator.	Types 38L, 81, 47, 39X, 83 alone 45/L alone 30 alone. 6V or 4V. Type 81 to remain 6V. vide A.F.O. 2365/29.
u	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.	30, 31, 45/L. Dull only.
r	BZ		6038A 6V			Gen. A separate apparatus.	SA, etc. In subs, the anodes will be from mains.

# BATTERY OUTFITS.

NB3

CHARGING CIRCUITS - 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 25 and 27 have an upper and a lower half but ~~26~~<sup>24</sup> and ~~28~~<sup>24</sup> have an upper half only and are combined with 20 Lower and 27 Lower respectively.

27 upper. One filament generator. 20 volt circuits.

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

28 upper. Two filament generators. 20 volt circuits.

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

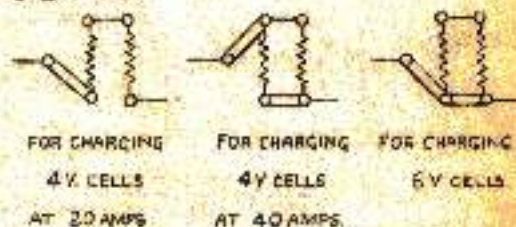
24 upper. One filament generator. No 20 volt circuits.

25 upper. Two filament generators. No 20 volt circuits.

In boards upper, link arrangements (28) must be set according to ship's voltage.

Reverse Current Switches (15)(20)(29) are fitted where the voltage from which the battery is being charged is comparable with that of the battery (see page N02).

Modern type charging generators are 500 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 numbers 21 and 22 show the Anode Battery charge discharge switches and the Reverse Current Switches always carry the identity numbers (15)(20)(29).

## BATTERY OUTFIT BW.

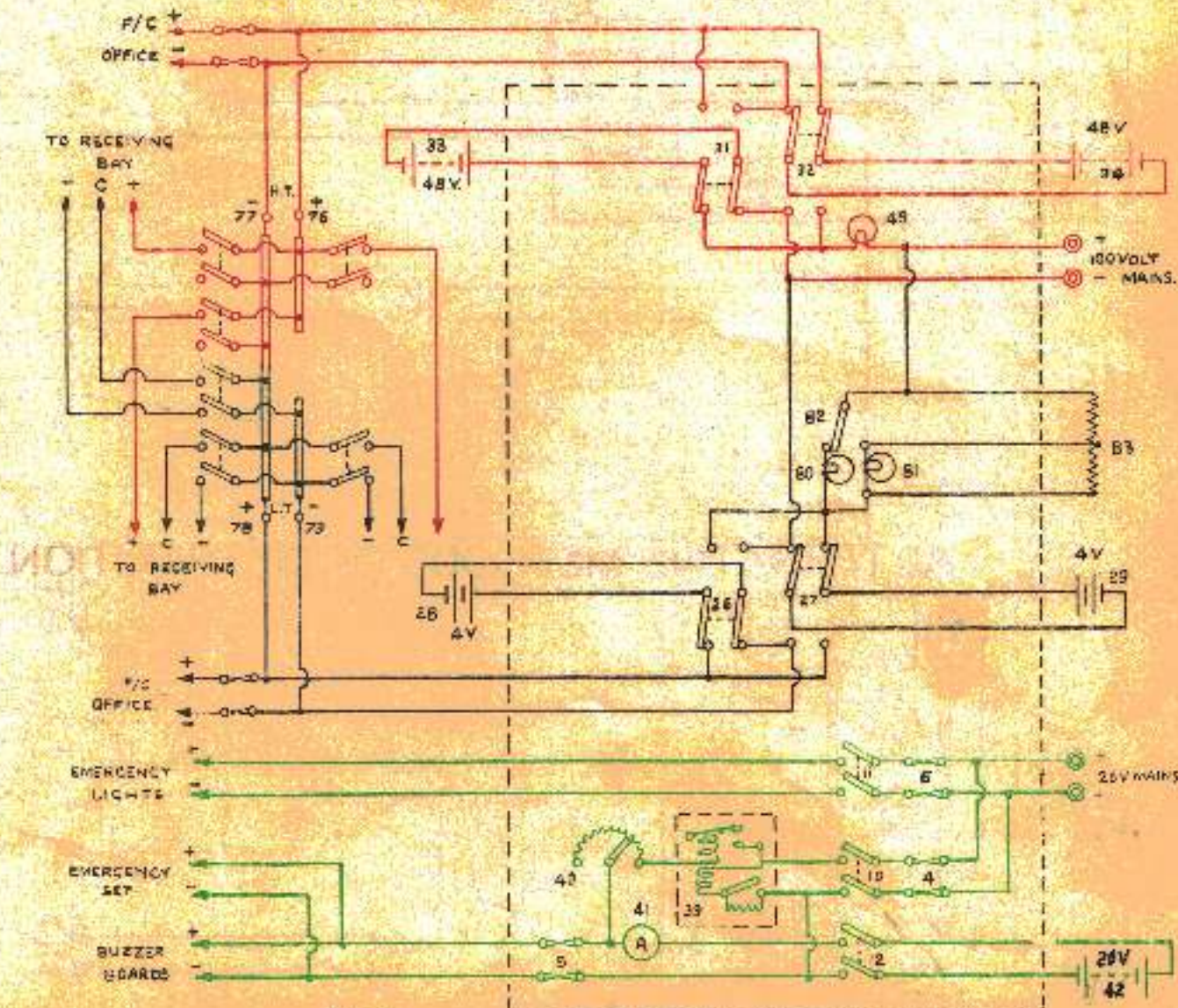


FIG. 1.

# BATTERY OUTFITS BA, BM, BN, BV.

NOTE:- FIG. 8. 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).

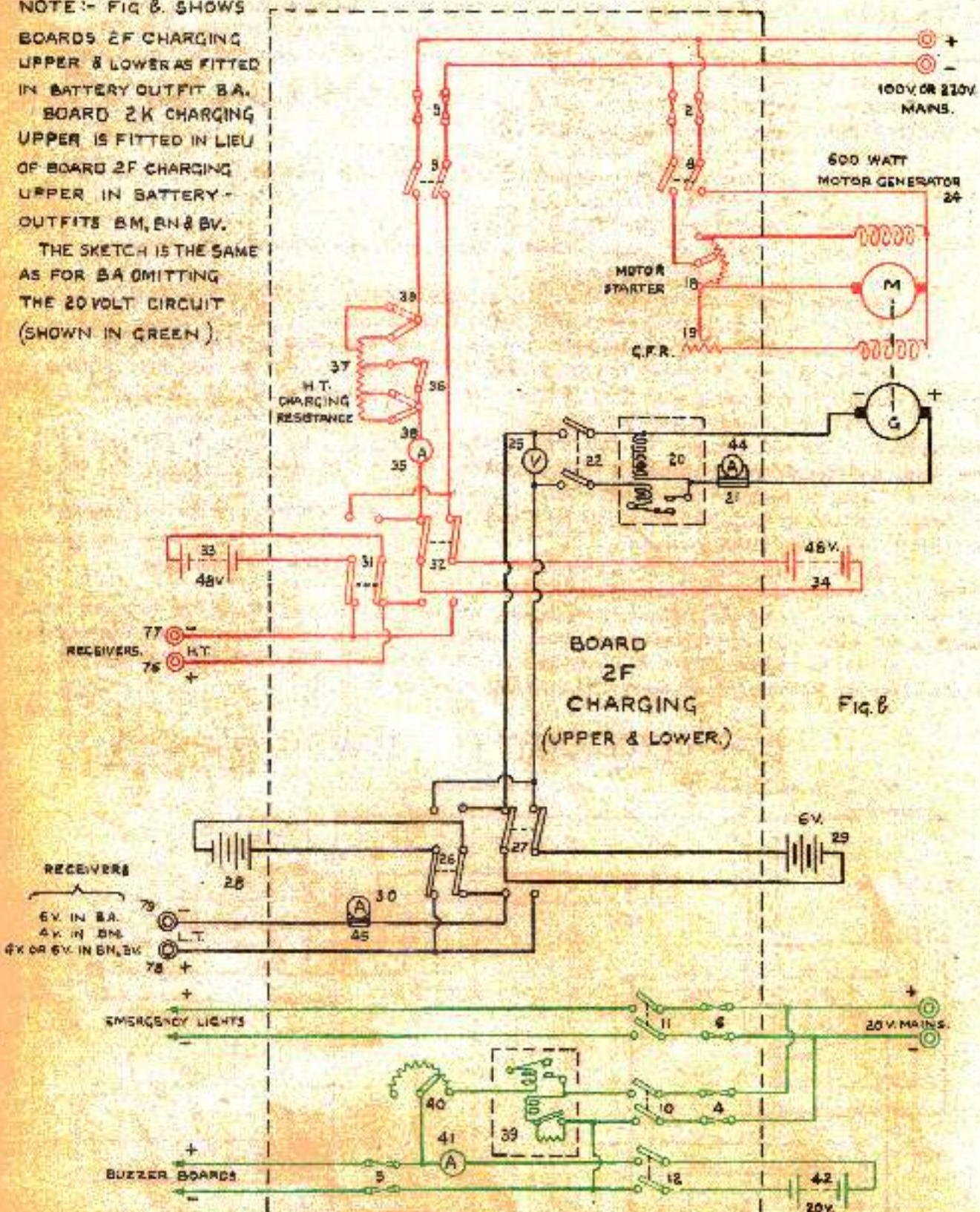
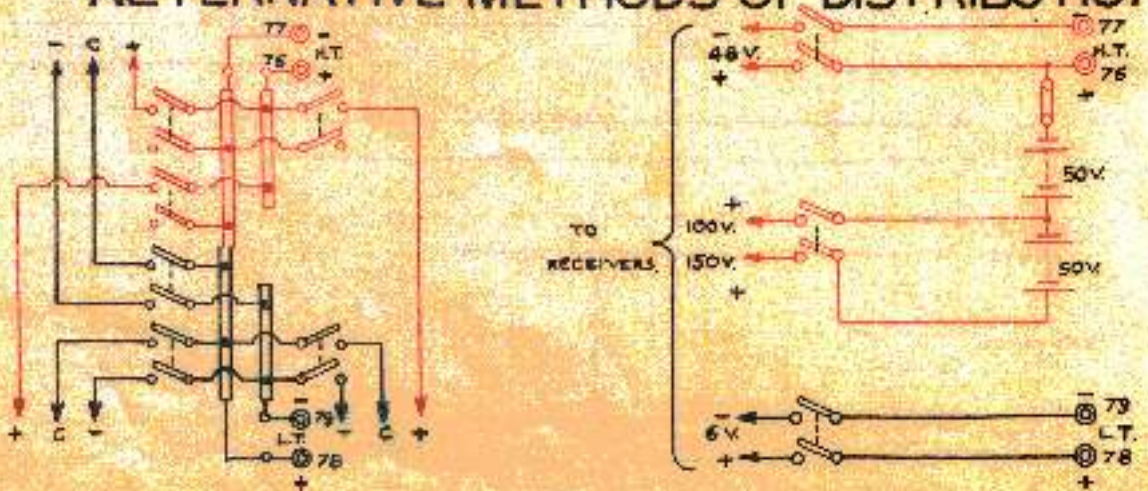


Fig. 8

## ALTERNATIVE METHODS OF DISTRIBUTION.



BATTERY OUTFITS BM, BN, BV.

BATTERY OUTFIT BA, NB5

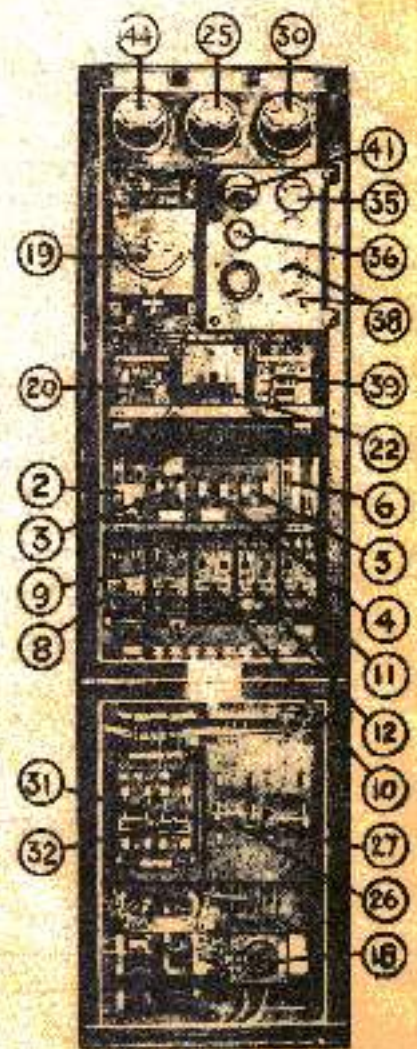
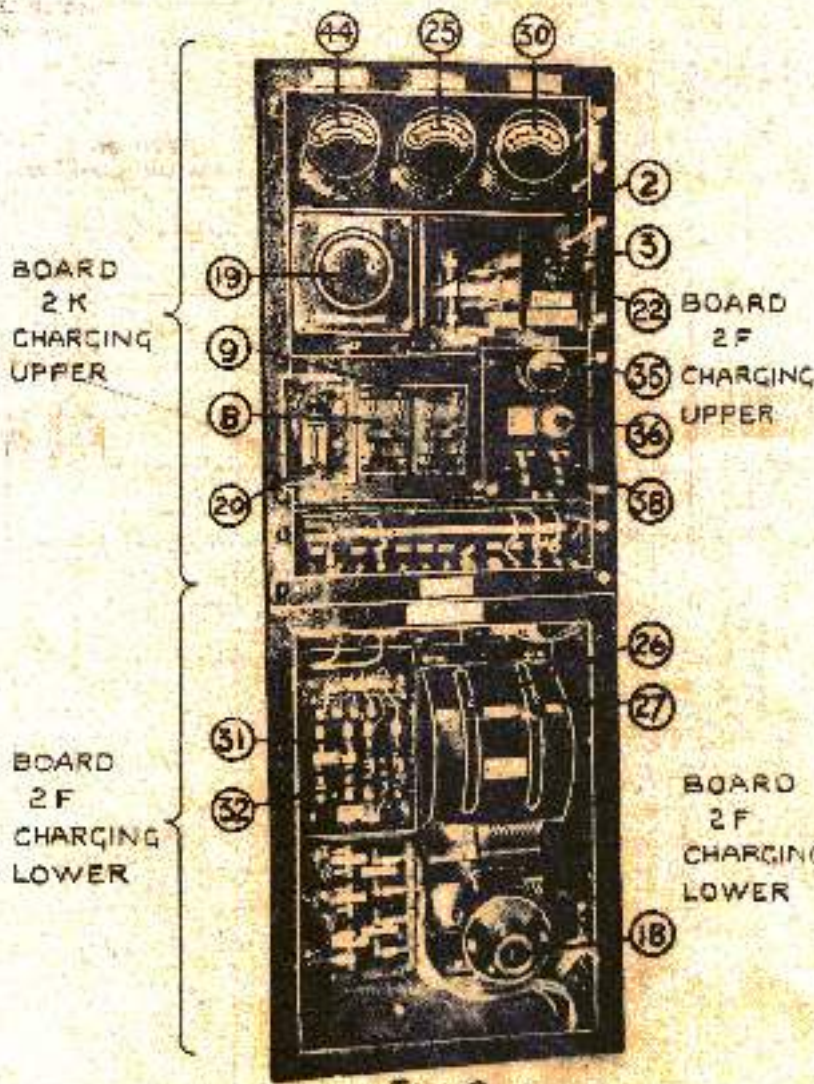


FIG. C BATTERY OUTFIT BR.

FIG. d

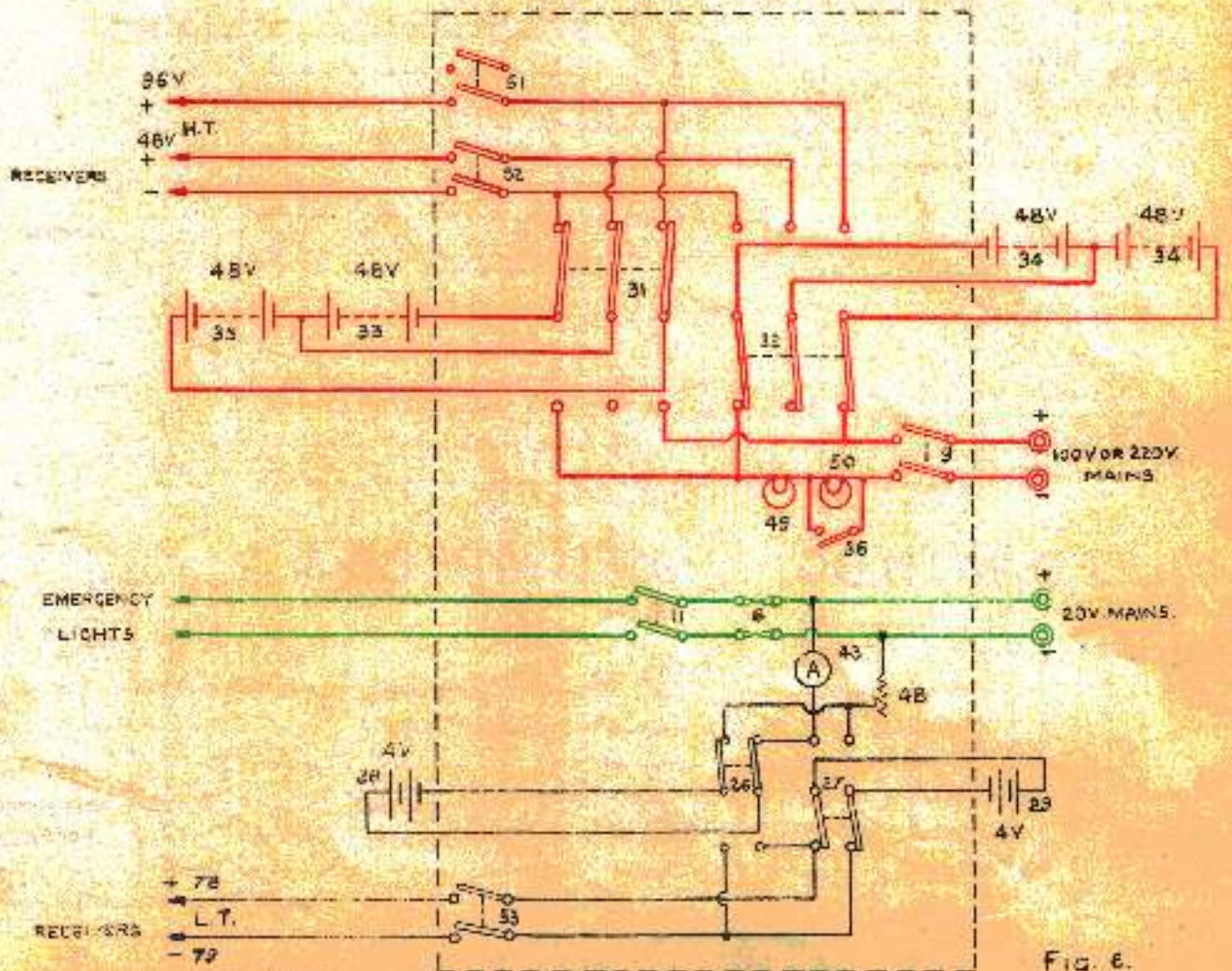


Fig. E.

NB6

# BATTERY OUTFITS BD & BG.

600 WATT  
MOTOR GENERATOR.

600 WATT  
MOTOR GENERATOR.

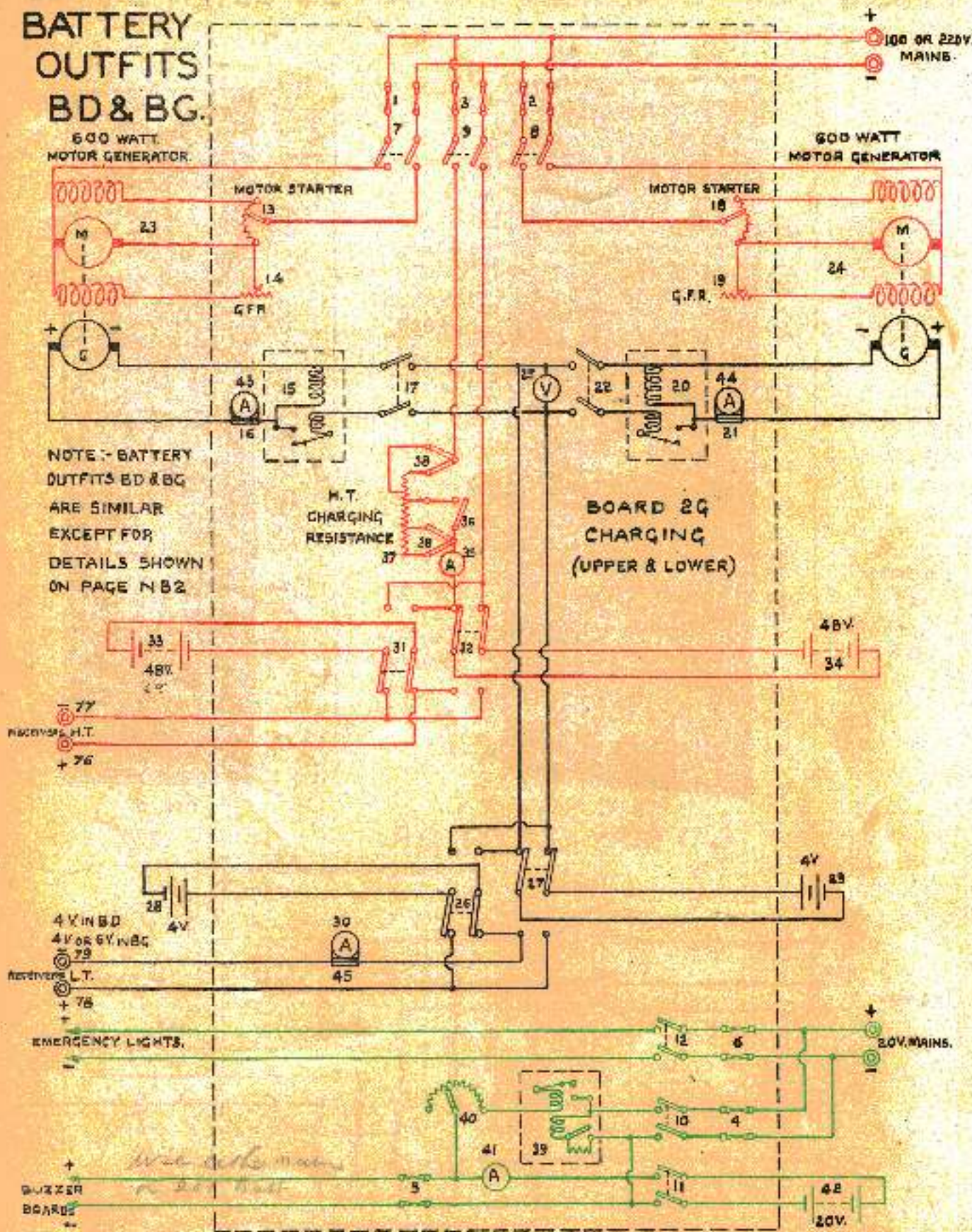
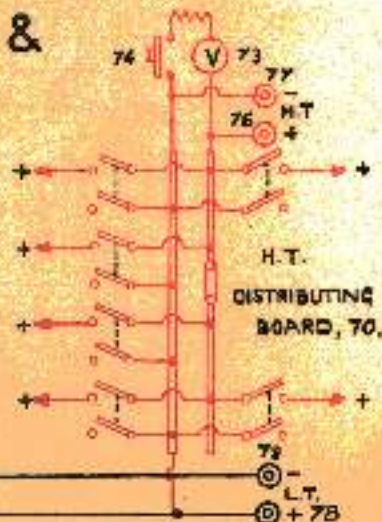
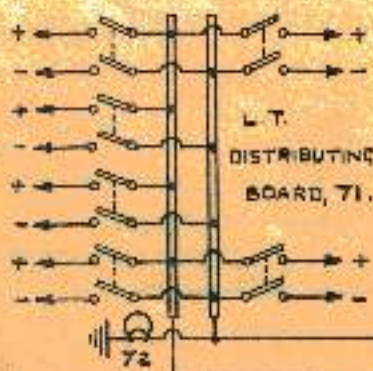
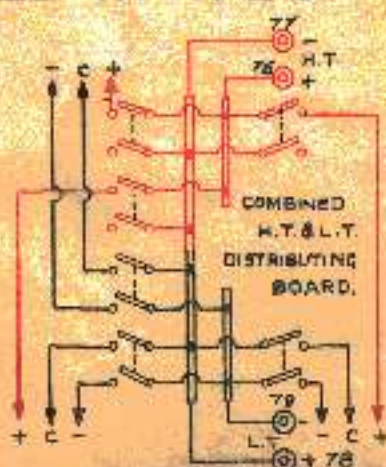


FIG. 7.

USED WITH BG.

USED WITH BD & BG.



BATTERY OUTFITS BD, BG.

BATTERY OUTFIT BC.

NB7

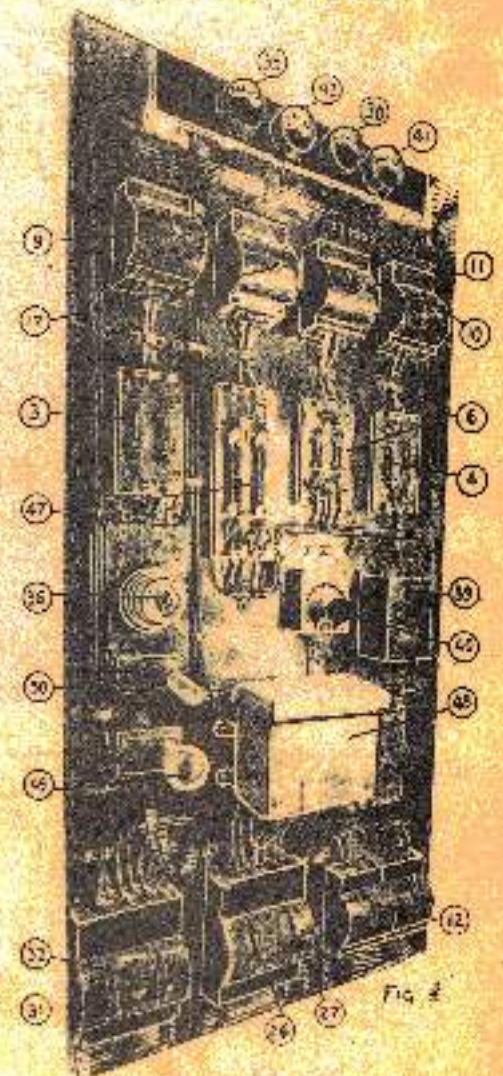
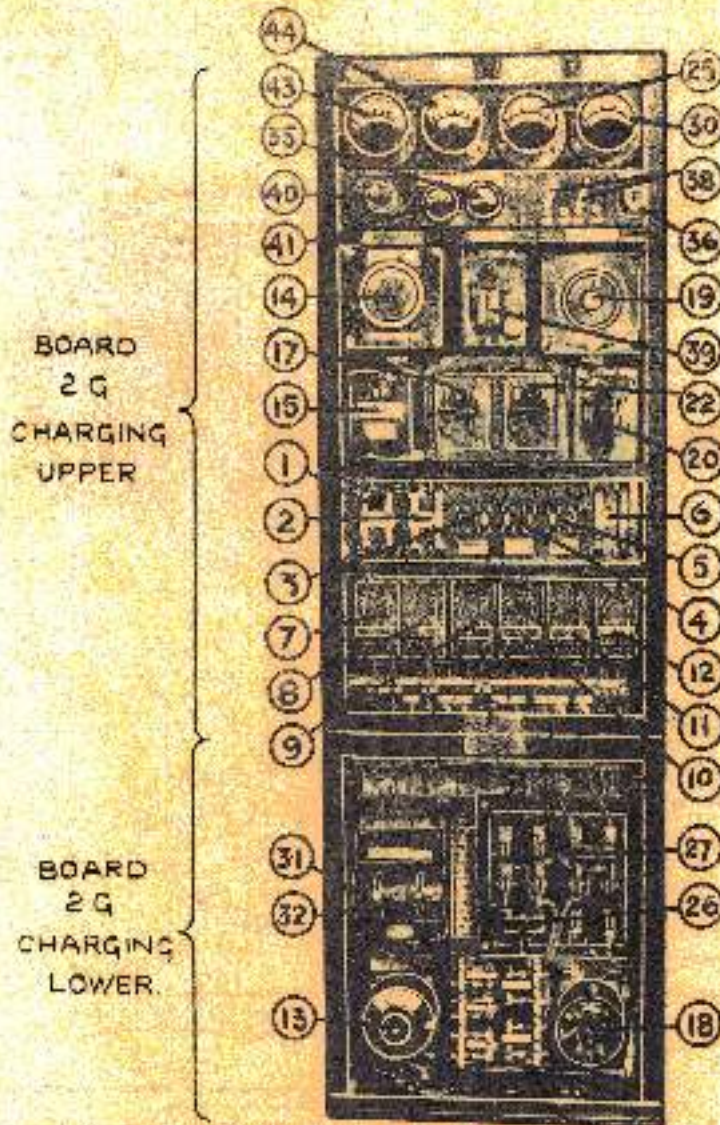


FIG. 9

FIG. 4

BATTERY OUTFIT BC.

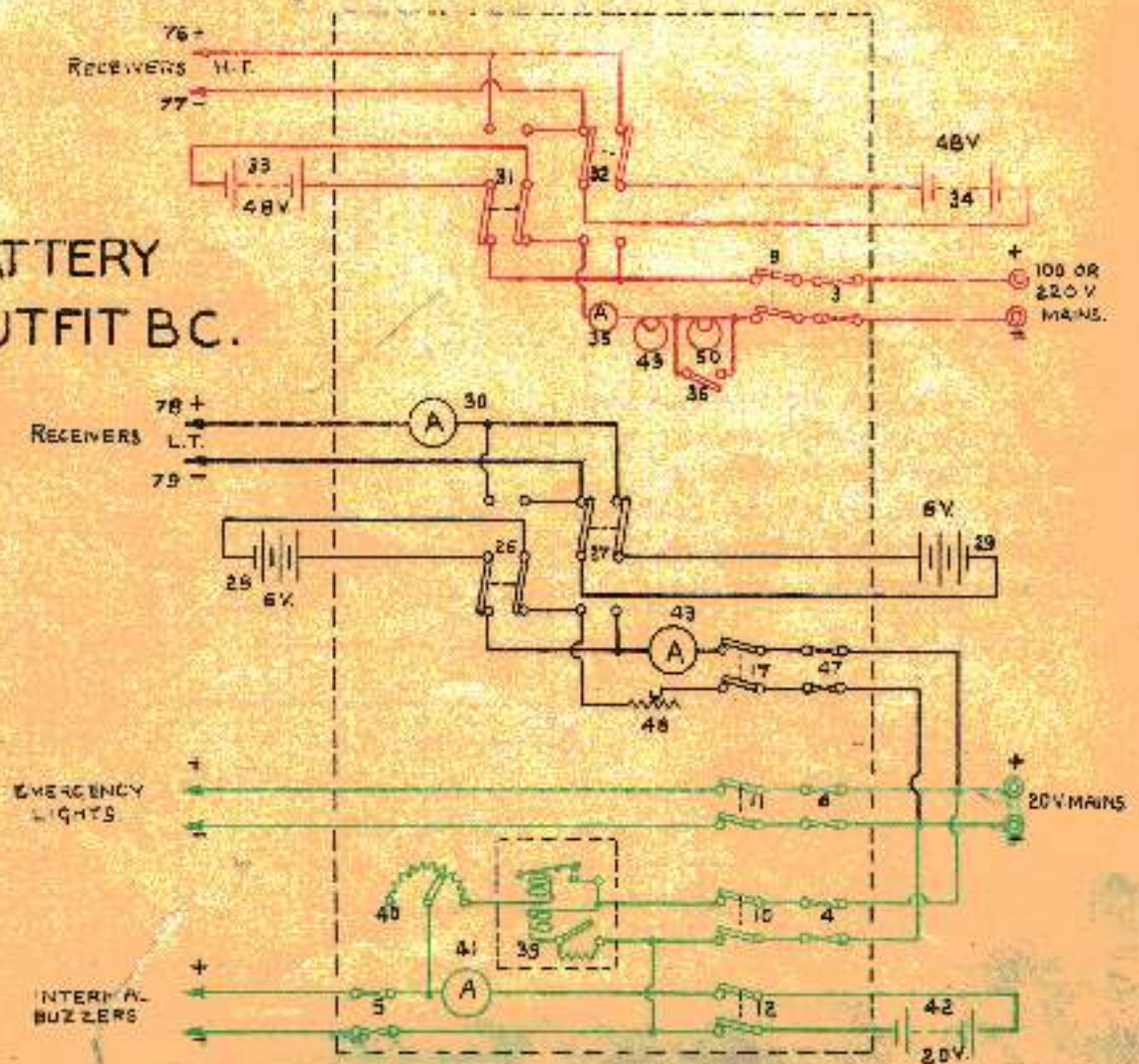


FIG. 4

# BATTERY OUTFITS BF, BK, BS, BU.

N B 9

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

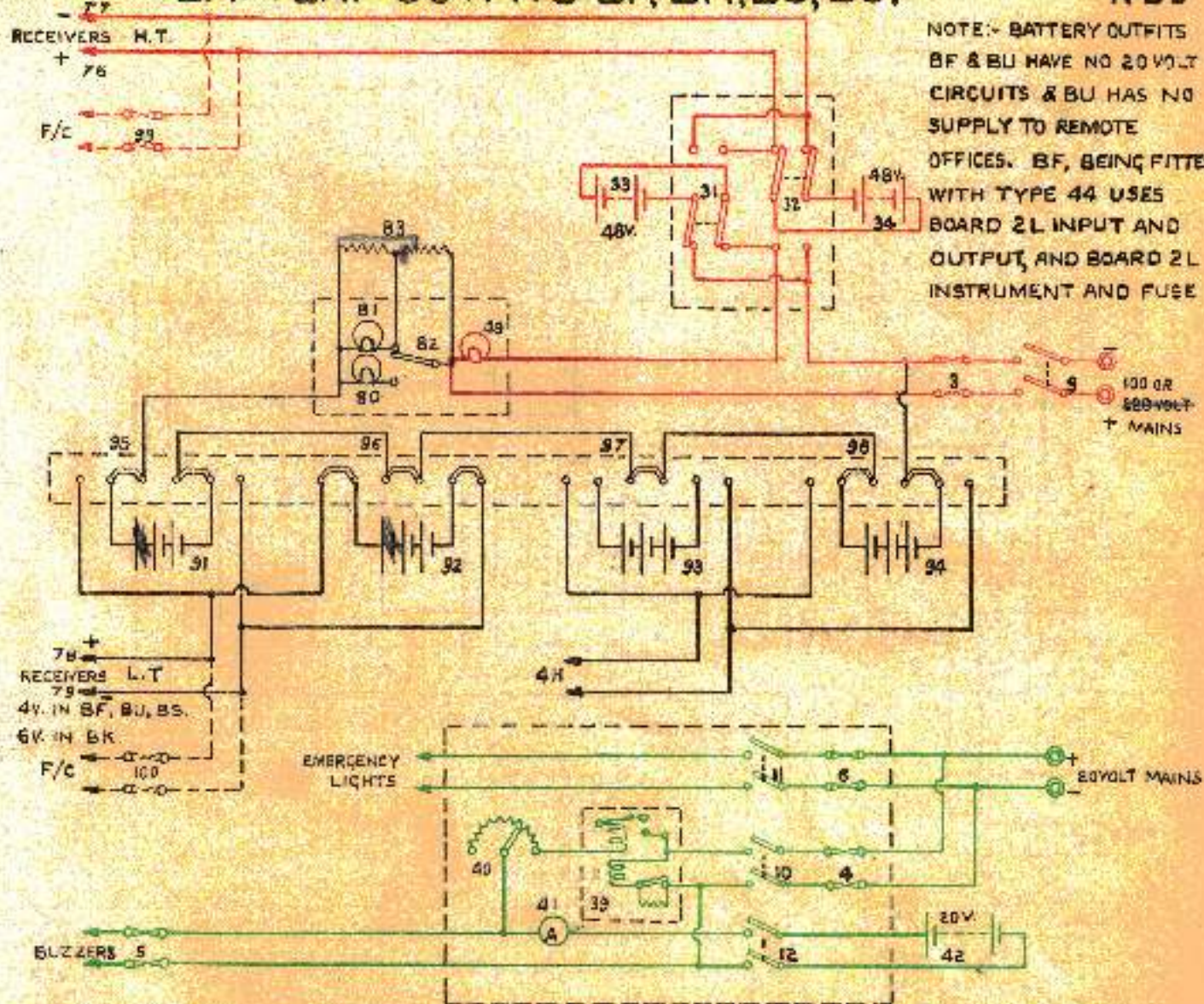


Fig. m.

Care must be taken to see that the snode battery charge-discharge switches (31)(32) are not left to charge when the ship's 100 volt (or 200 volt) power is out off, as otherwise these batteries will discharge themselves through the mat resistances (83) and any L.T. batteries in the circuit. (Vide A.P.O. 1972/27.)

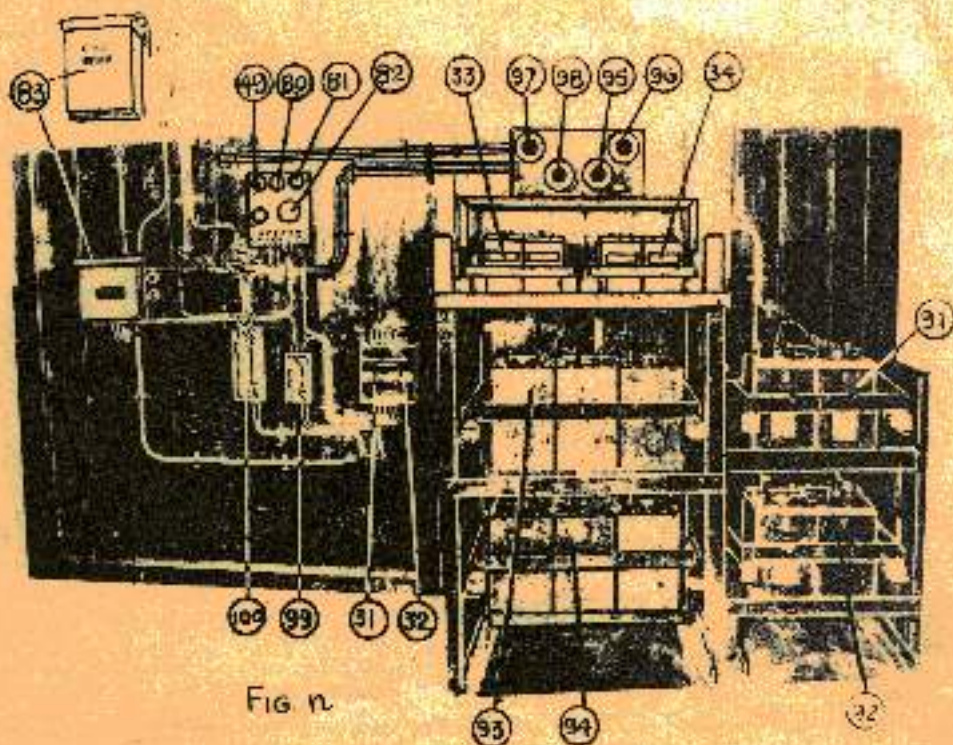


Fig. n.



NB10

# BATTERY OUTFIT B.J.

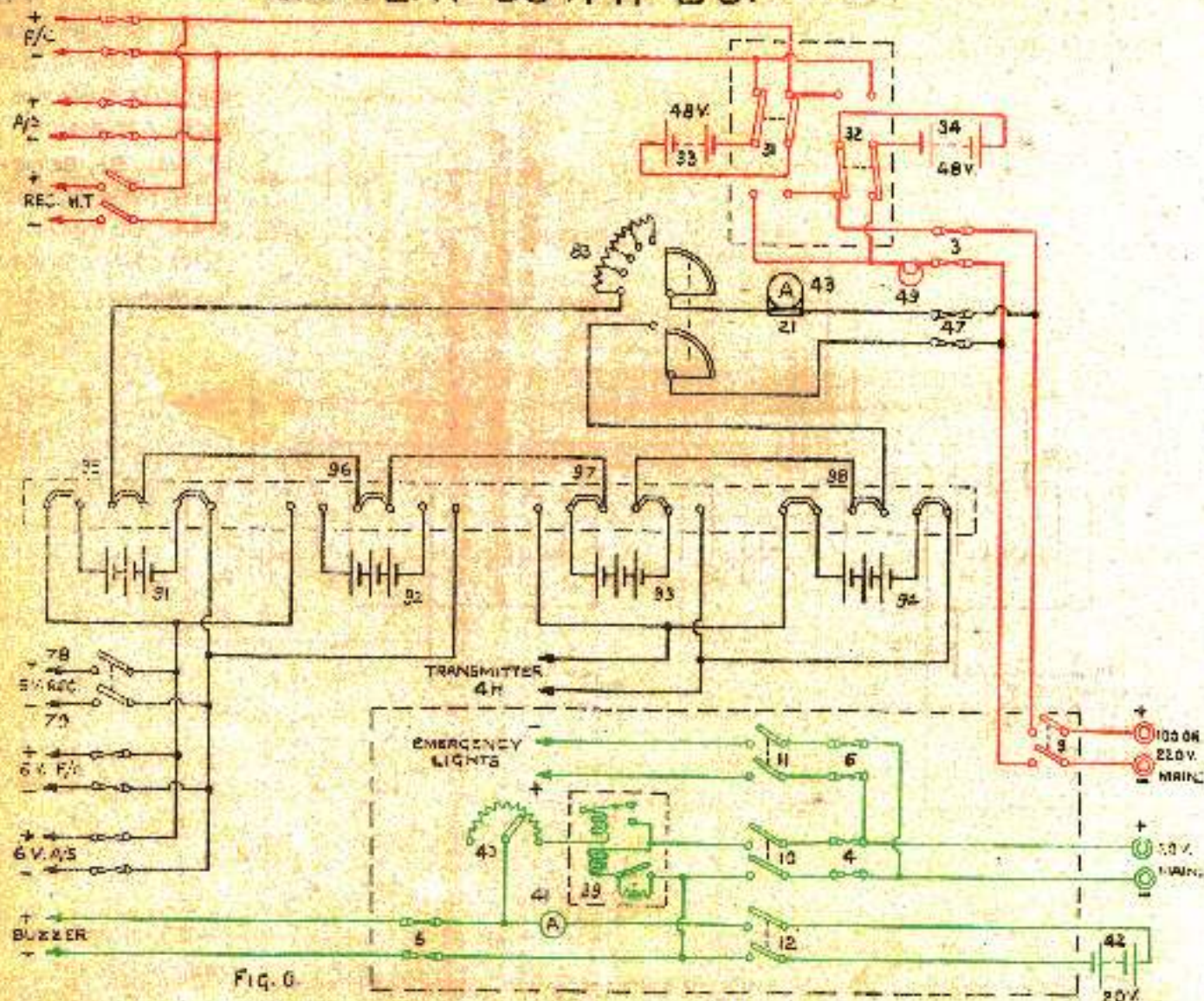


Fig. 0

# BATTERY OUTFITS BX, BY.

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

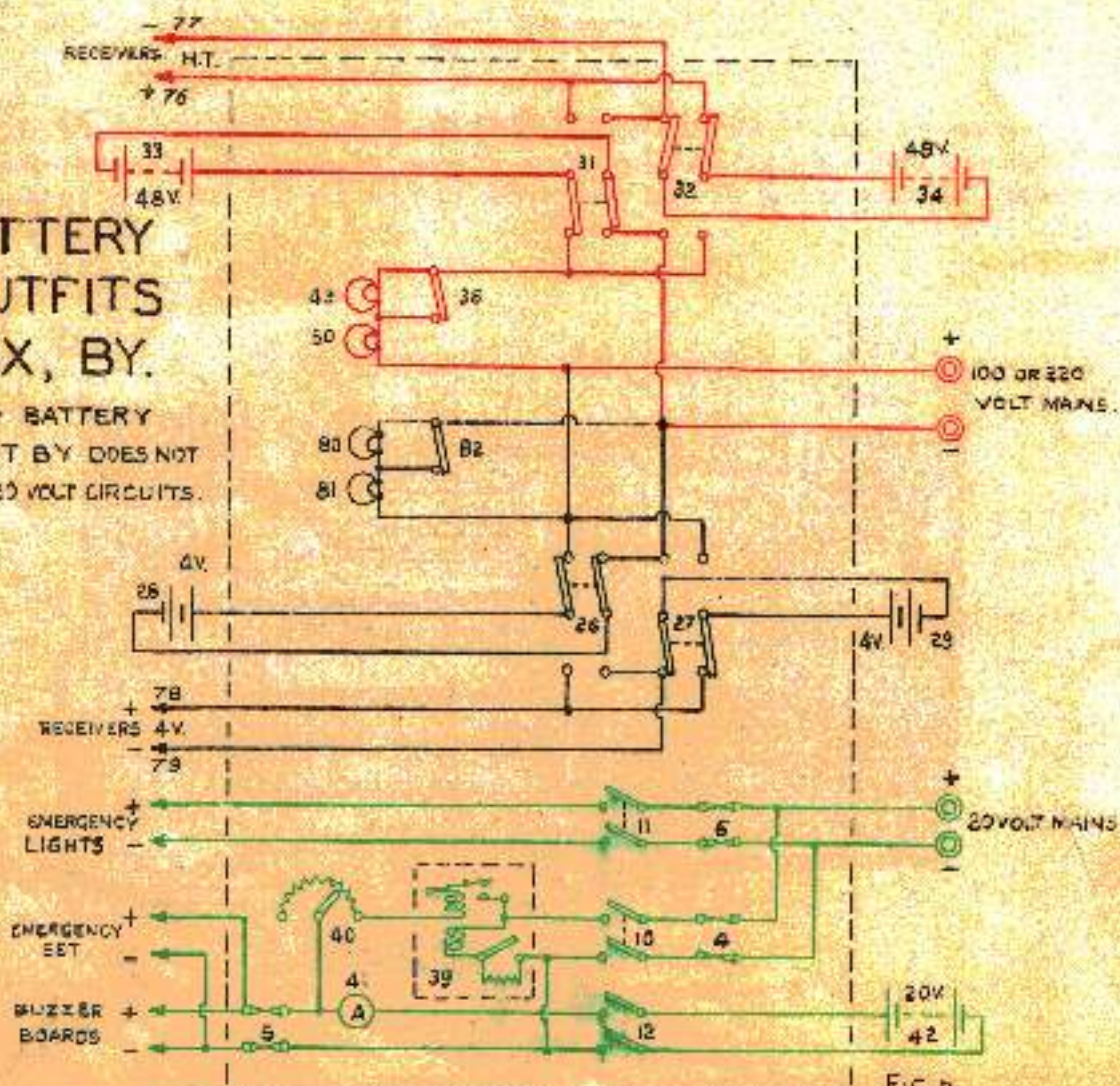
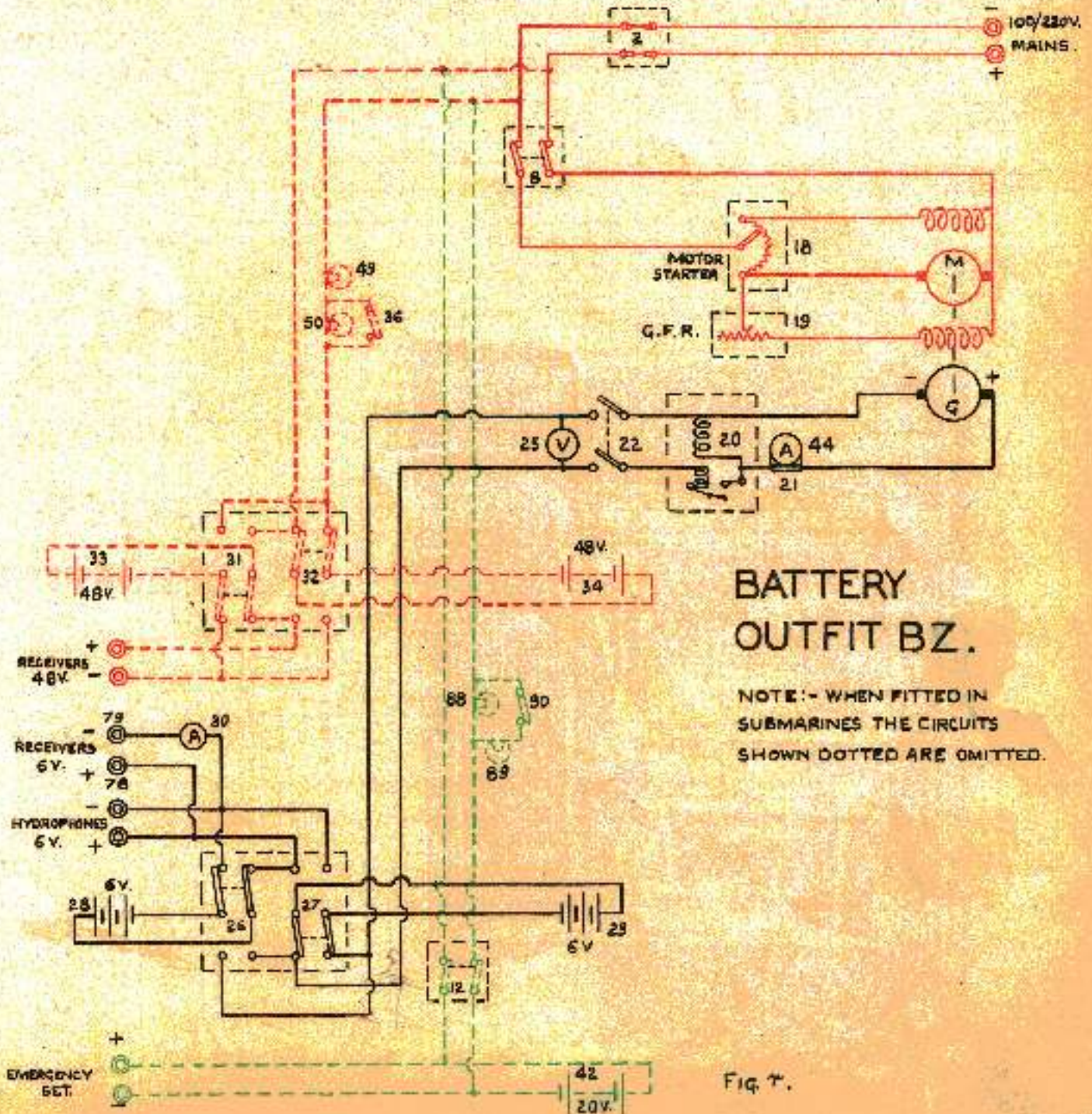
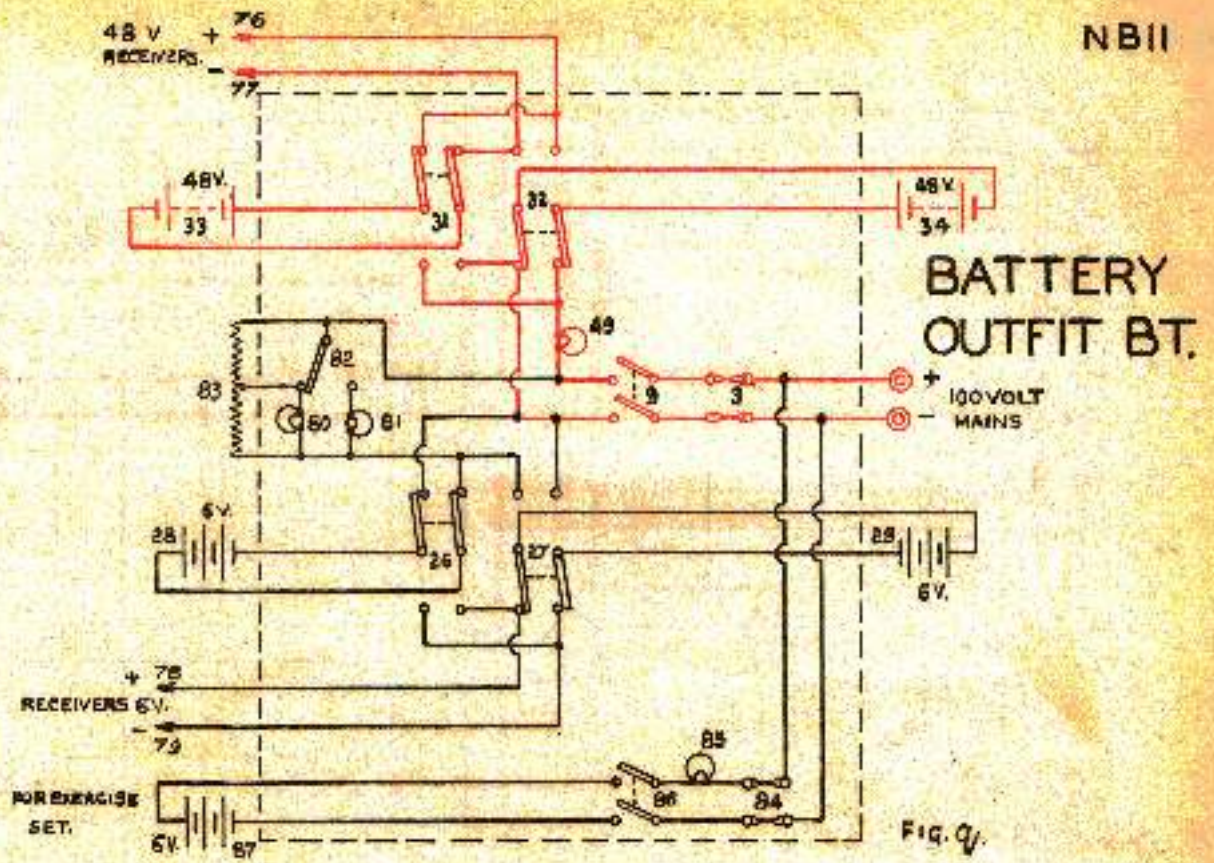


Fig. p



### BATTERY OUTFIT BZ.

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

BATTERY OUTFIT BQ.

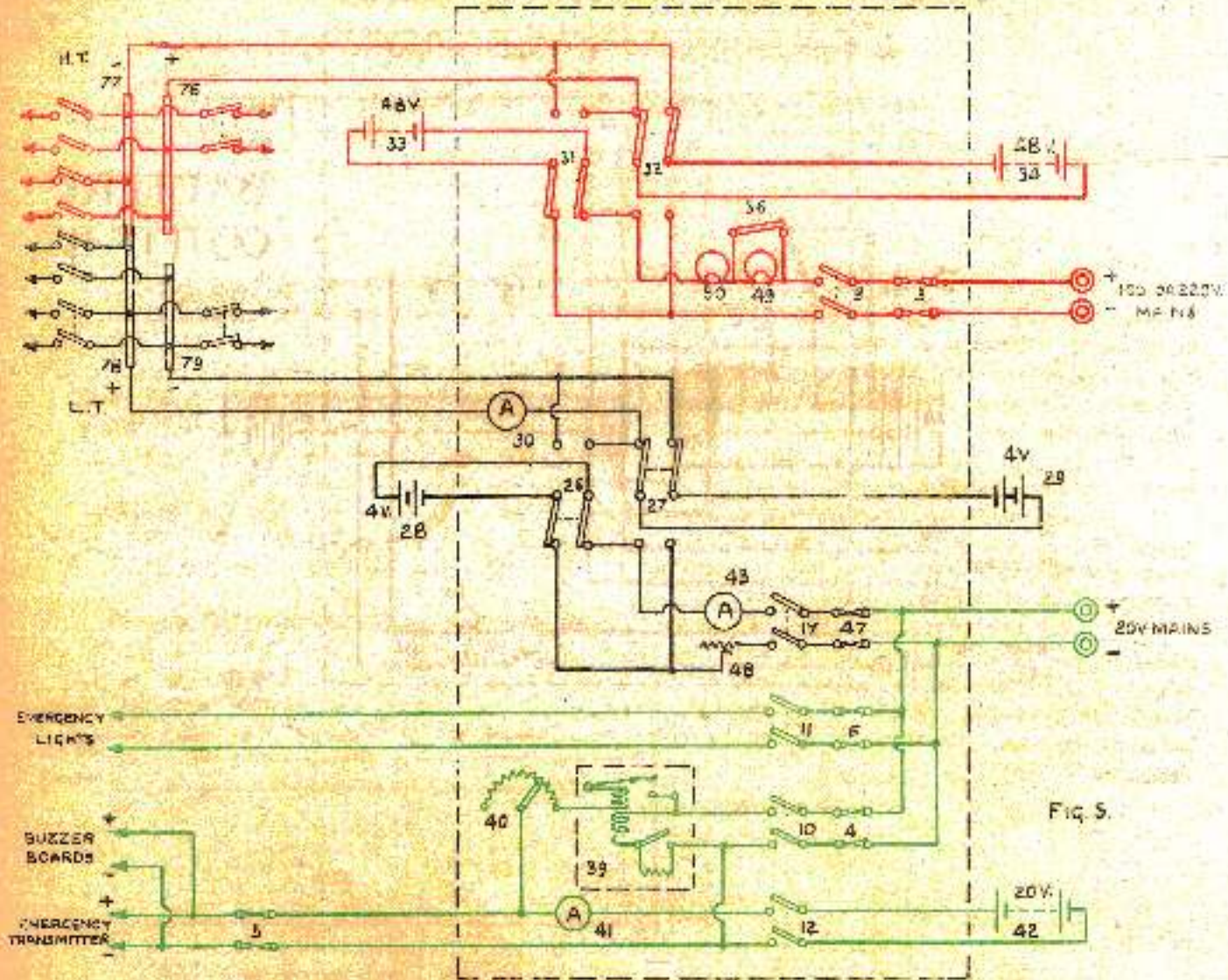


FIG. 5.

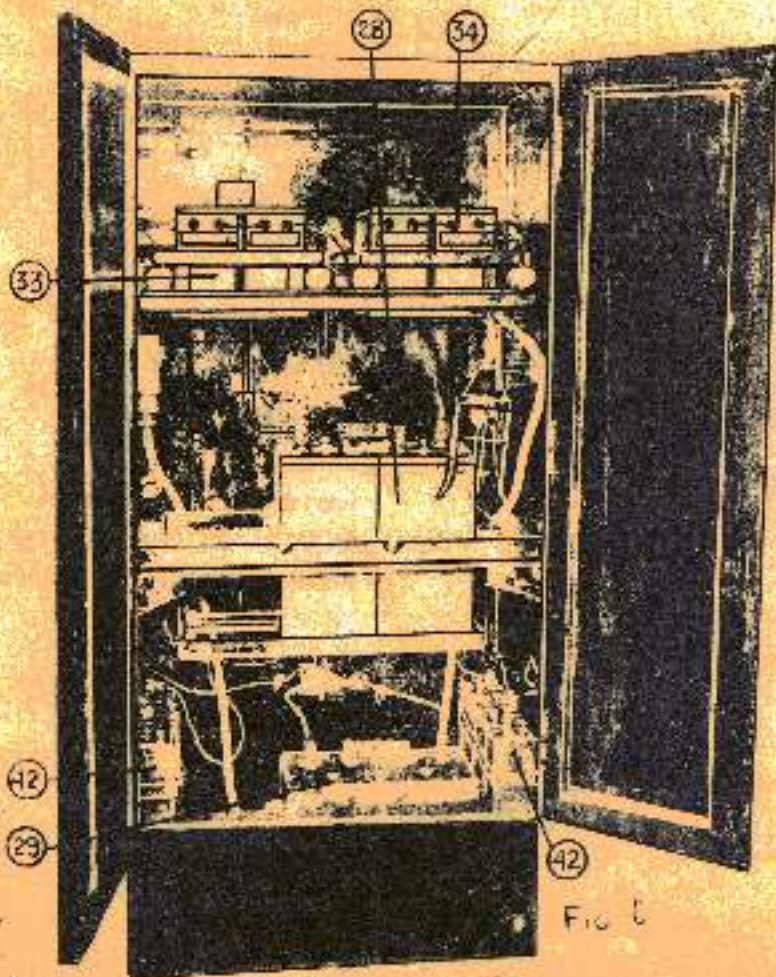


FIG. 6.

BATTERY CUPBOARD F.

# BATTERY OUTFITS.

NB1

## MODIFICATIONS TO CHARGING ARRANGEMENTS WHEN 100 VOLT BATTERIES ARE FITTED.

Figure 4, 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 (81)(82)(89)(100) are so arranged that, when charging, each 100 volt battery will be divided into two 50 volt tanks (30)(33) and (34)(34) in parallel (each with separate charging resistance (48)(104)(105)(106)) and when discharging, the 50 volt tanks (30)(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.

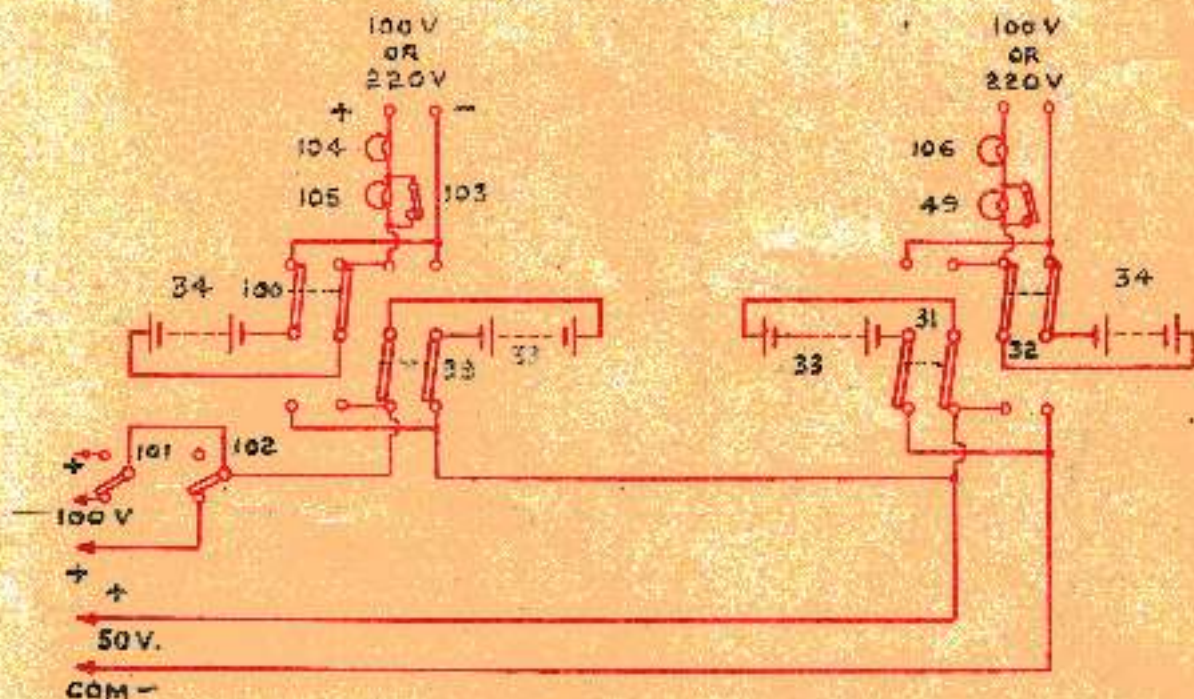


Fig. 4.