

**A. T. & T. Co.'s**

December, 1927

Specifications 4810

(Replacing Specifications 4732  
and Supplement A)

**THE BELL TELEPHONE CO. OF CANADA**  
**ENGINEERING DEPARTMENT**

**STATIONS**  
**HAND TELEPHONE SETS**

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## APPARATUS, TOOLS AND REPAIR PARTS

1. The following apparatus, tools and repair parts are required by these specifications:

**Apparatus Blanks:** **#50-D APPARATUS BLANK**  
Flat, round metal plate with instruction card holder in center. Used to cover dial hole of A1 or A3 handset mountings at non-dial stations.

**#50-H APPARATUS BLANK**  
Convex round metal plate with instruction card holder in center. Used to cover dial hole of B1 or B3 handset mountings at non-dial stations.

**Apparatus Blank**  
**Repair Parts:** Use those included in specifications for MACHINE SWITCHING STATIONS.

**Cords:** **D3H CORD**  
Handset mounting cord, three conductor, brown silk, with metal stay hook. Standard length 5-1/2 feet. Furnished in 8, 11 and 15 foot lengths when required. Used for connecting B1, C1 or A1 handset mountings to subscriber set or connecting block. When used on A1 mounting, the D-86917 Cord Fastener is required.

The D3G Cord without metal stay hook was formerly used with the A1 mounting.

**D5F CORD**  
Handset mounting cord, five conductor, brown silk, with metal stay hook. Standard length 5-1/2 feet. Furnished in 8, 11 and 15 foot lengths when required. Used for connecting B2, B3, A2 or A3 handset mountings to subscriber set or connecting block. When used on A2 or A3 mountings, the D-86917 Cord Fastener is required.

The D5E Cord without metal stay hook was formerly used with the A2 and A3 mountings.

**D5G CORD**  
Cord used to connect dial to C1 Handset Mounting.

**M1E CORD**  
Black strap cord 4-1/2 inches and 5-1/2 inches long. Used for dial connections in B1, B2, B3 and A1, A2 and A3 handset mountings.

## APPARATUS, TOOLS AND REPAIR PARTS

### **#6022 CORD**

Combination cord for B1 Handset Mounting at dial stations. Consists of:

- One D3H Cord—5 ft. 6 in. long.
- One M1E Cord—4-1/2 in. long.
- One M1E Cord—5-1/2 in. long.

### **#6023 CORD**

Combination cord for B2 Handset Mounting at dial stations. Consists of:

- One D5F Cord—5 ft. 6 in. long.
- Two M1E Cords—4-1/2 in. long.
- One M1E Cord—5-1/2 in. long.

### **#6024 CORD**

Combination cord for B3 Handset Mounting at dial stations. Consists of:

- One D5F Cord—5 ft. 6 in. long.
- One M1E Cord—4-1/2 in. long.
- One M1E Cord—5-1/2 in. long.

### **#6025 CORD**

Combination cord for C1 Handset Mounting at dial stations. Consists of:

- One D3H Cord—5 ft. 6 in. long.
- One D5G Cord—3-1/2 in. long.

### **Cord**

#### **Fastener:**

### **D-86917 CORD FASTENER**

Used with A1, A2 and A3 handset mountings when cords with metal stay hooks are employed. See Fig. 15.

### **Dials:**

### **#2-HA, #2-HB, #2-HE DIALS**

Six spring, five terminal, station dials for use with B1, B2, B3 and A1, A2, A3 and C1 Handset Mountings. The 2-AA, 2-AB or 2-AE dials may be used in place of the 2-HA, 2-HB or 2-HE dials at common battery signaling, local battery talking stations.

### **Dial Repair Parts:**

Use those included in MACHINE SWITCHING STATIONS.

### **Dial Mounting:**

### **#39-A DIAL MOUNTING**

Used to mount the 2-H type dial on top of the C1 Handset Mounting at dial stations. Includes a 52-C Dial Adapter.

**Handsets:****E1A HANDSET**

Used only with A1, A2 and A3 Handset Mountings. Consists of an E1 handle, a transmitter, a receiver and H3A cord. (Some of the handles may be marked D-80370.)

**E1B HANDSET**

Used with B1, B2, B3 and A1, A2, A3 and C1 handset mountings. Consists of an E1 handle, #395 Transmitter, #557 Receiver and H3B cord. Has .006 MF condenser in transmitter and may be distinguished from the E1A Handset by the transmitter code on the cone inside the mouth-piece.

Standard length of cord used with handset is 4 ft. Furnished in 7 ft. and 10 ft. lengths when required.

When the E1B handset is used with an A1, A2 or A3 Handset Mounting, the D-86917 Cord Fastener should be used.

Order as follows:

(Quantity) E1B Handsets.

**Handset Mountings:****A1 HANDSET MOUNTING (See Fig. 2, page 9)**

Desk mounting used with E1A or E1B handset at all stations except:

Two-Party Selective Message Rate  
Dial Stations—Party on Tip,

No. 1 Residence System and

No. 2 Private Branch Exchange Stations.

(Some of the mountings may be marked D-76869.) Has .006 MF condenser. Requires 50-D apparatus blank at non-dial stations and 2-HA, 2-HB or 2-HE dials at dial stations.

Use of this mounting should be restricted to non-dial stations where practicable.

**A2 HANDSET MOUNTING**

Desk mounting used with E1A or E1B handset at:

Two-Party Selective Message Rate  
Dial Stations—Party on Tip

Has .006 MF condenser. Requires 2-HA, 2-HB or 2-HE Dials.

## APPARATUS, TOOLS AND REPAIR PARTS

### **A3 HANDSET MOUNTING**

Desk mounting used with E1A or E1B handset at:

- No. 1 Residence System and
- No. 2 Private Branch Exchange Stations

Has .006 MF condenser. Requires 50-D apparatus blank at non-dial stations and 2-HA, 2-HB or 2-HE Dials for dial stations.

Use of this mounting should be restricted to non-dial stations where practicable.

### **B1 HANDSET MOUNTING (See Fig. 1, page 8)**

Desk mounting used with E1B handset at all stations except:

- Two-Party Selective Message Rate
- Dial Stations—Party on Tip,
- No. 1 Residence System and
- No. 2 Private Branch Exchange Stations.

Requires 50-H Apparatus Blank at non-dial stations and 2-HA, 2-HB and 2-HE Dials for dial stations.

Order as follows:

For non-dial stations:

(Quantity) B1 Handset Mountings equipped with 50-H apparatus blanks and D3H cords.

For dial stations:

(Quantity) B1 Handset Mountings equipped with (specify code number) dials, D3H and M1E cords.

### **B2 HANDSET MOUNTING**

Desk mounting used with E1B handset at:

- Two-Party Selective Message Rate
- Dial Stations—Party on Tip

Requires 2-HA, 2-HB or 2-HE dials.

Order as follows:

(Quantity) B2 handset mountings equipped with (specify code number) dials, D5F and M1E cords.



### **B3 HANDSET MOUNTING**

Desk mounting used with E1B handset at:

No. 1 Residence System and

No. 2 Private Branch Exchange Stations

Requires 50-H Apparatus Blank at non-dial stations and 2-HA, 2-HB and 2-HE Dials for dial stations.

Order as follows:

For non-dial stations:

(Quantity) B3 handset mountings equipped with 50-H apparatus blanks and D5F cords.

For dial stations:

(Quantity) B3 handset mountings equipped with (specify code number) dials, D5F and M1E cords.

### **C1 HANDSET MOUNTING (See Fig. 3, page 10)**

Mounting fastened to side of desk, table, etc. Used only with E1B handset at all stations except:

Two-Party Selective Message Rate

Dial Stations—Party on Tip,

No. 1 Residence System and

No. 2 Private Branch Exchange Stations.

Has instruction card holder on top of mounting. Requires 39-A Dial Mounting, D3H and D5G cords and 2-HA, 2-HB or 2-HE dials at dial stations.

Order as follows:

For non-dial stations:

(Quantity) C1 Handset Mountings equipped with D3H cord.

For dial stations:

(Quantity) C1 Handset Mountings equipped with D3H and D5G cords, 39-A dial mounting and (specify code number) dials.

#### **Instruction Cards:**

Same as furnished for No. 2 type dials. See MACHINE SWITCHING STATIONS.

#### **Number Plates:**

Number plates used with 2-HA, 2-HB or 2-HE dials are the 132 type. The second code letter of the dial indicates the code letter of the number plate. See MACHINE SWITCHING STATIONS.

#### **Tools:**

#### **NO. 143 TOOL OR EQUIVALENT**

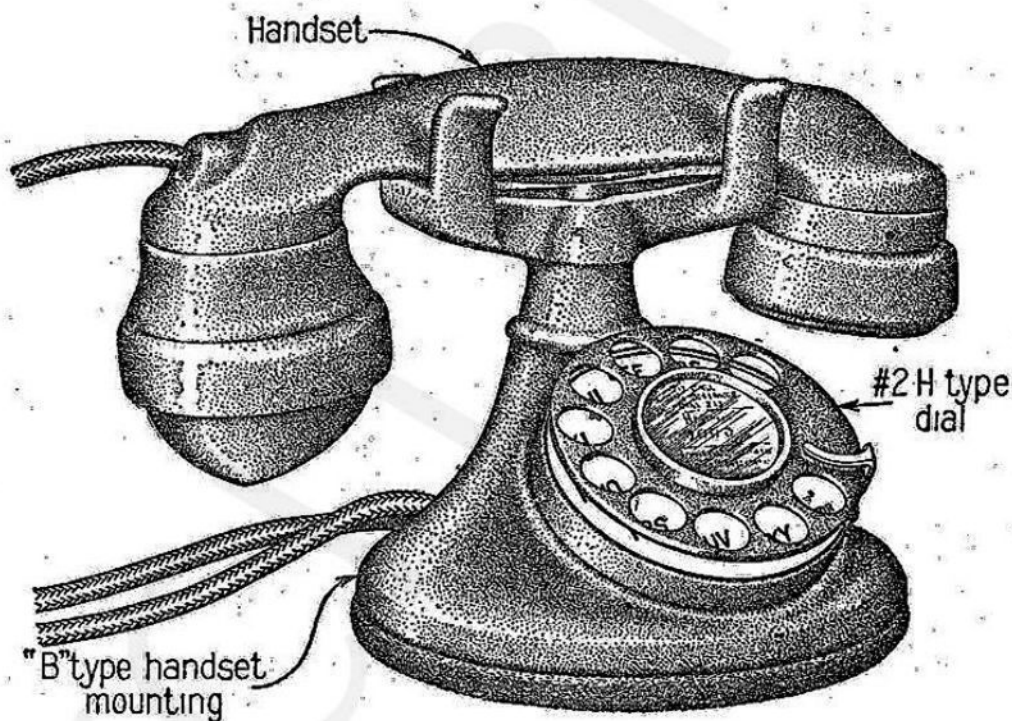
Used for adjusting springs in the B1, B2, B3, C1 and A1, A2 and A3 handset mountings.

## GENERAL

**2. Scope:** These specifications cover the installation and maintenance features peculiar to the following hand telephone sets and which are not included in other handbooks covering station apparatus and practices.

### 3. Hand Telephone Sets.

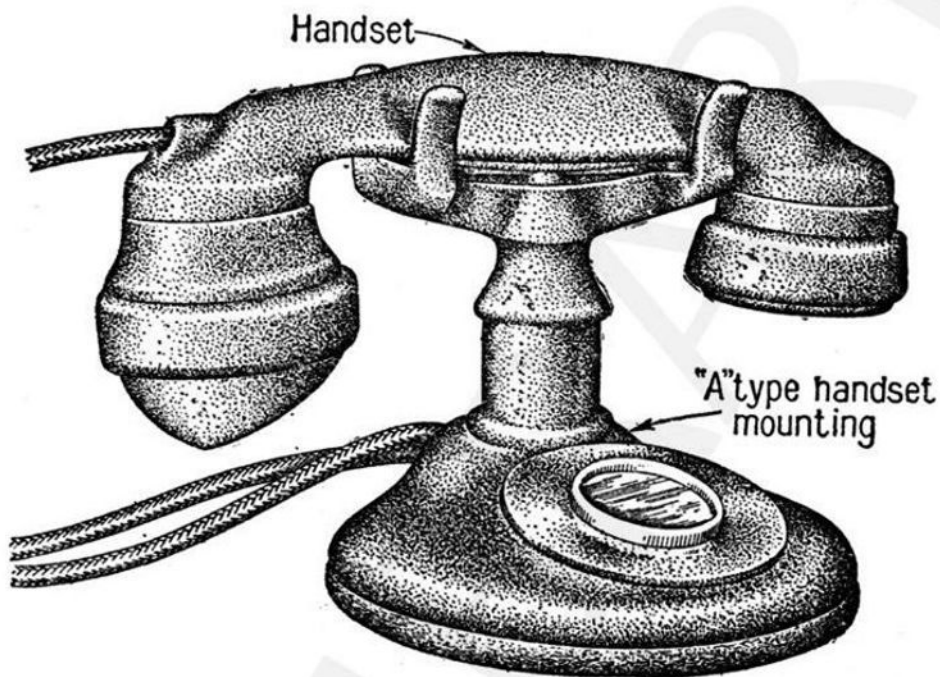
**Hand Telephone Set Consisting of "B" Type Handset Mounting (equipped with 2-H type dial) and E1B Handset**



**Fig. 1**



**Hand Telephone Set Consisting of "A" Type Handset Mounting  
(equipped with #50-D Apparatus Blank)  
and E1A or E1B Handset**

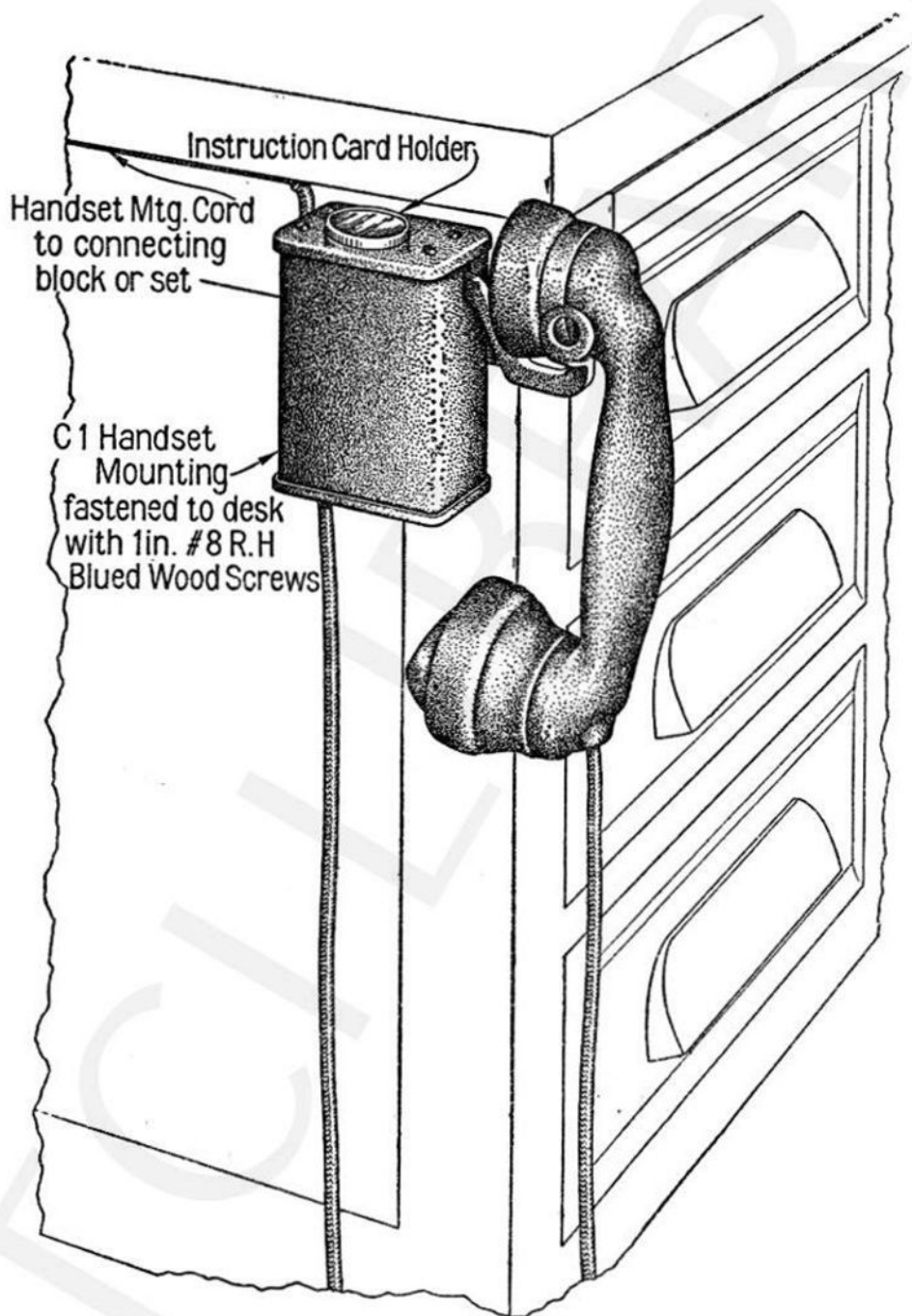


**Fig. 2**

GENERAL

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**Hand Telephone Set Consisting of C1 Handset Mounting and  
E1B Handset**



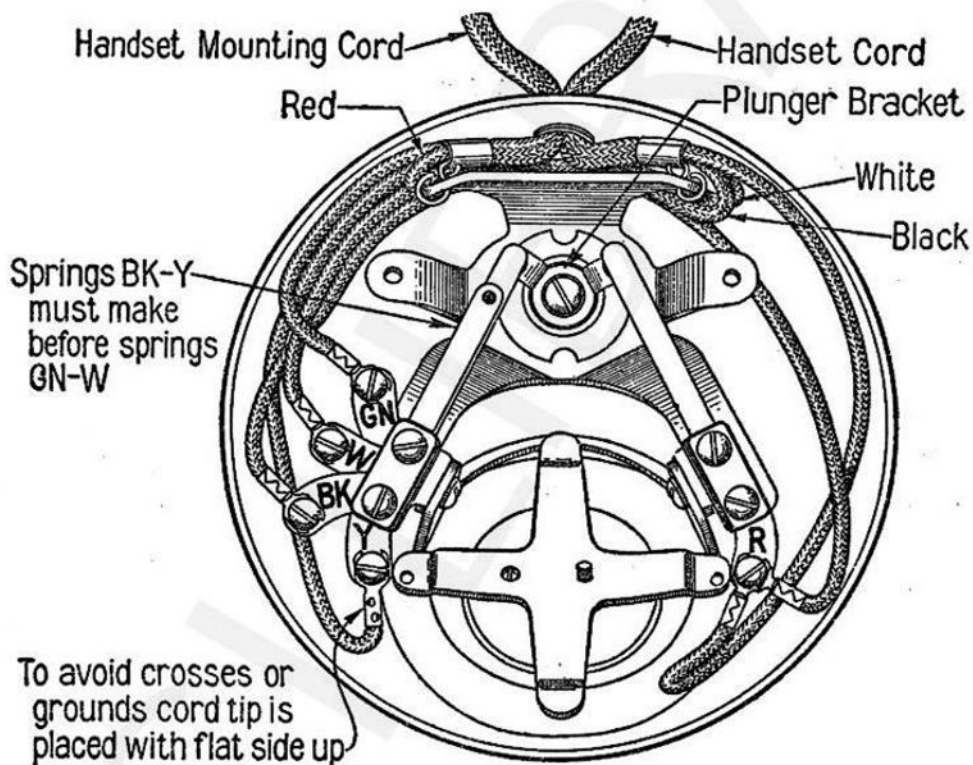
**Fig. 3**

**4. Cording of Handset Mountings.** The arrangement of the apparatus and cords in bases of the handset mountings is shown below:

**For C. B. Non-Dial, Magneto, and C. B. Signaling,  
Local Battery Talking Non-Dial Stations**

**B1 Handset Mounting**

Red cord terminal of handset mounting cord and white and black terminals of handset cord are placed underneath cords, as shown, to prevent interference with contact springs.



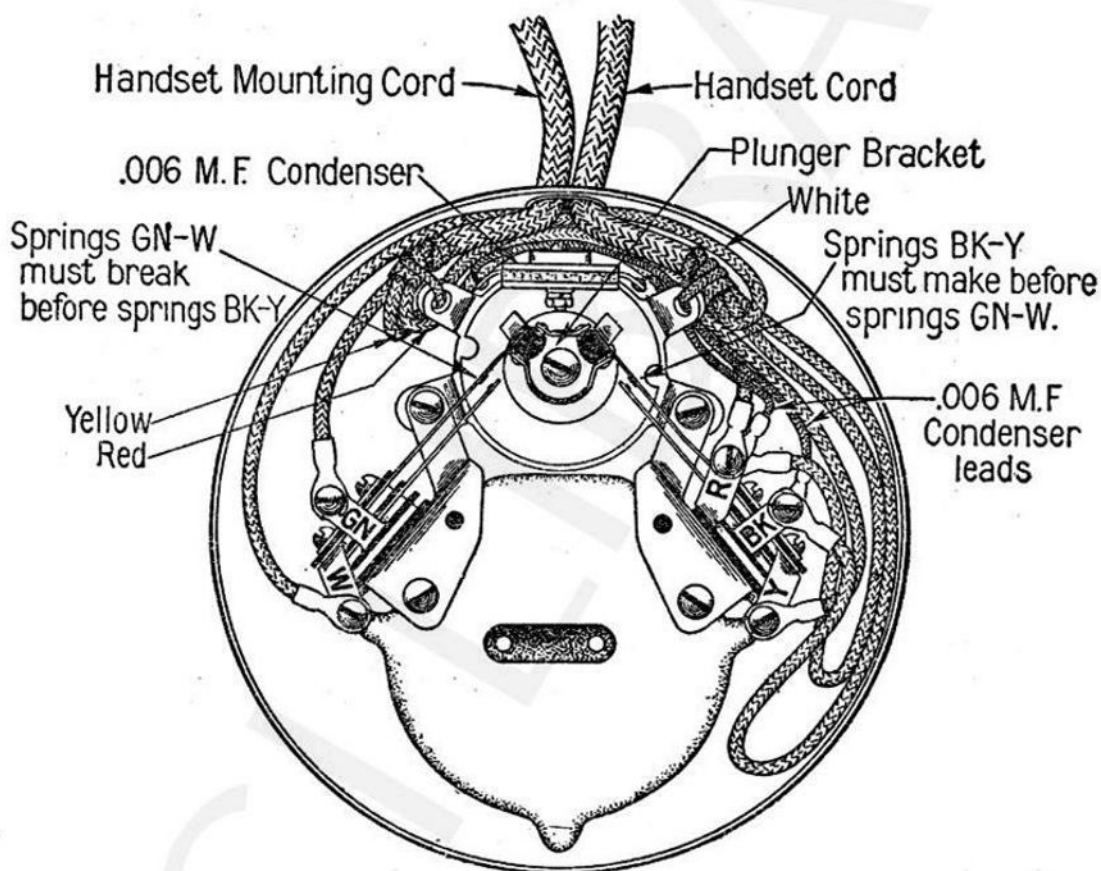
**Fig. 4**

## GENERAL

## For C. B. Non-Dial, Magneto, and C. B. Signaling, Local Battery Talking Non-Dial Stations

### A1 Handset Mounting

Yellow and red cord terminals of handset mounting cord and white terminal of handset cord are placed underneath cords, as shown, to prevent interference with contact springs.



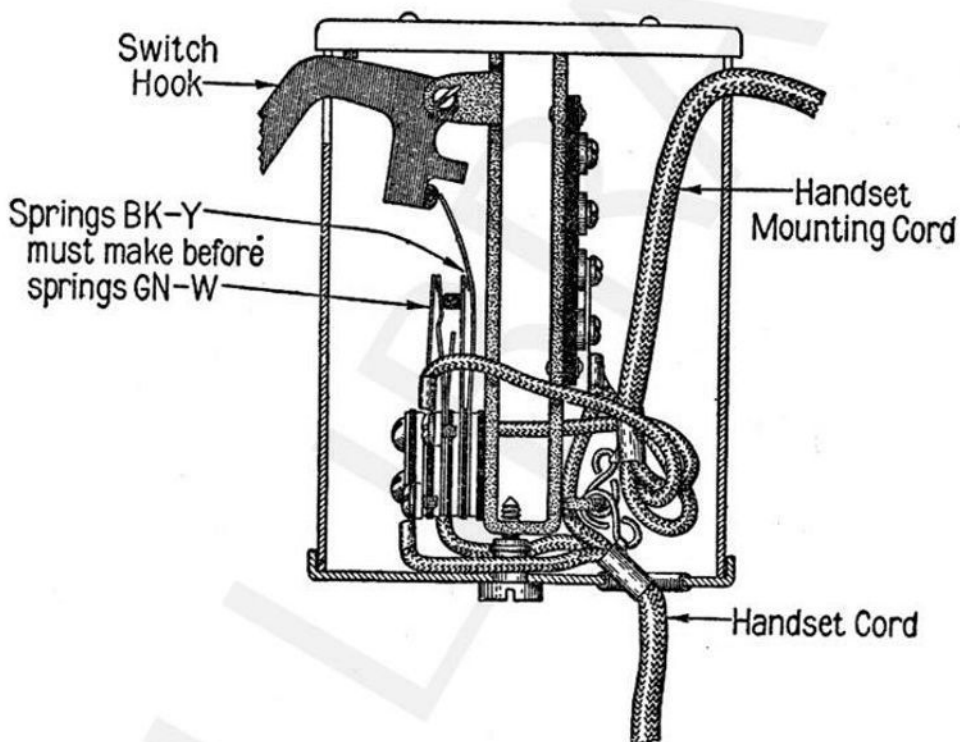
**Fig. 5**

Cord tips are placed with flat side up (shown white) to prevent crosses or grounds.

**For C. B. and C. B. Signaling, Local Battery  
Talking Dial and Non-Dial Stations and  
Magneto Stations**

**C1 Handset Mounting**

Cording shown is for non-dial stations. Connections for both non-dial and dial stations are given in Figs. 17 and 20.



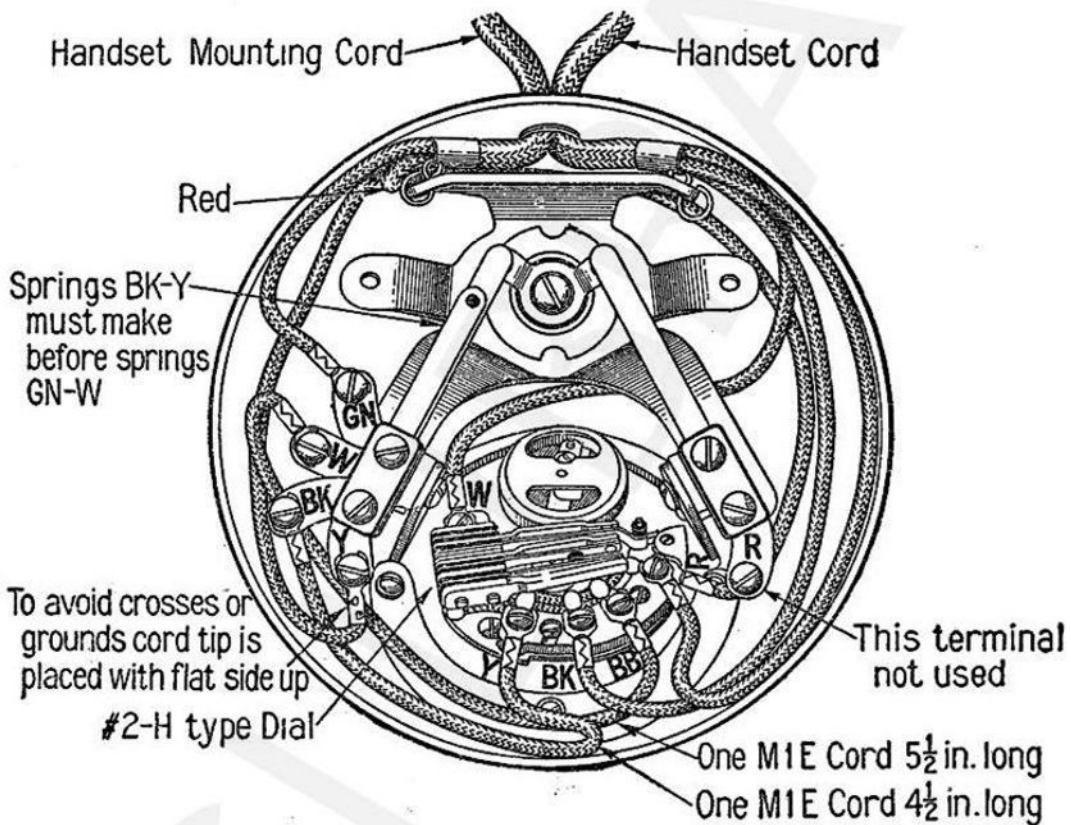
**Fig. 6**

**GENERAL**

**For C. B. Dial Stations**

**B1 Handset Mounting**

Red cord terminal of handset mounting cord is placed underneath cords, as shown, to prevent interference with contact springs.



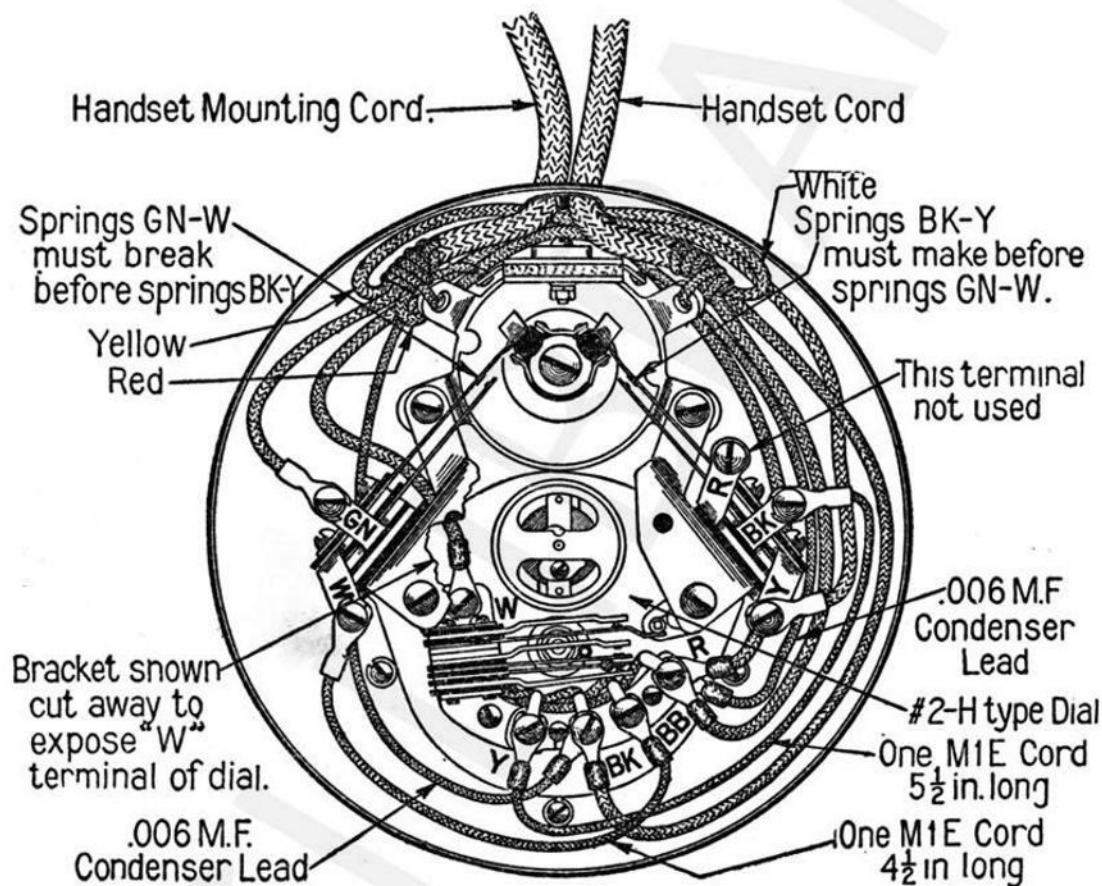
**Fig. 7**



## For C. B. Dial Stations

### A1 Handset Mounting

Yellow and red cord terminals of handset mounting cord and white terminal of handset cord are placed underneath cords, as shown, to prevent interference with contact springs.



**Fig. 8**

Cord tips are placed with flat side down (where joint is shown dark) and up (where shown white), to prevent crosses or grounds.

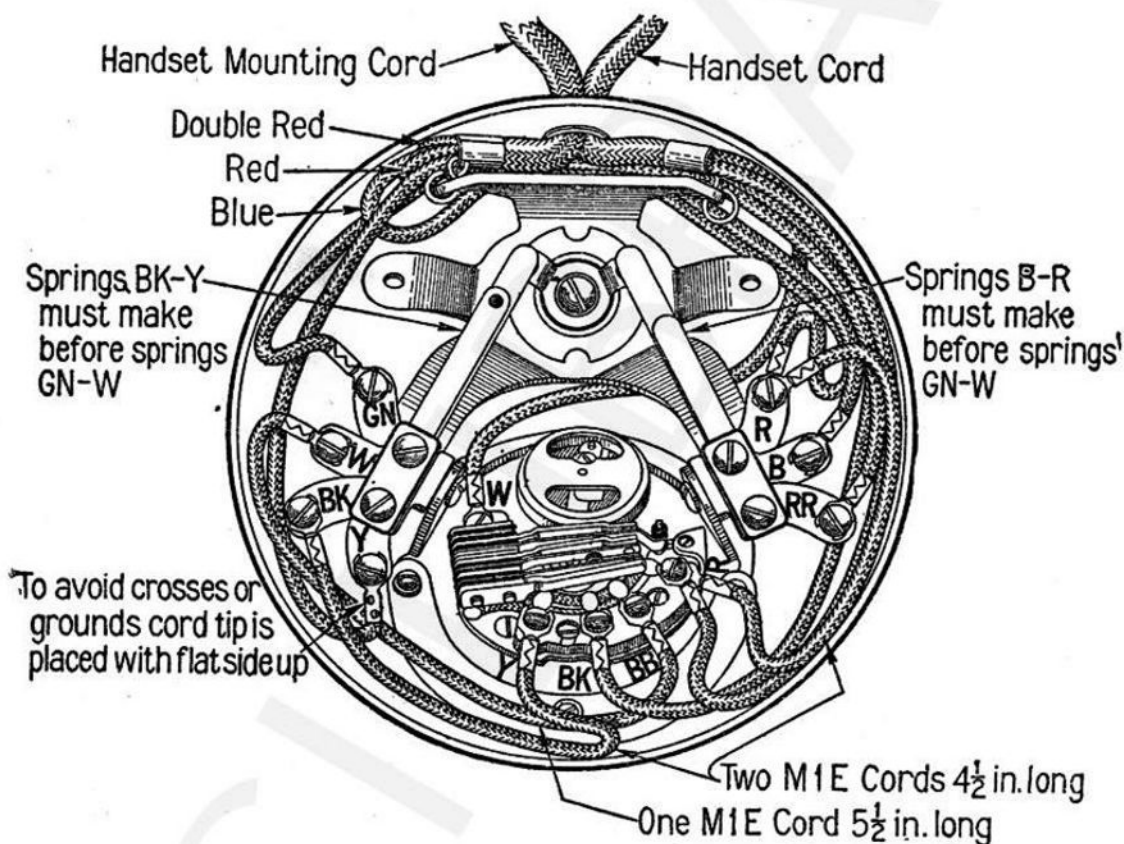
**Note:** For C. B. signaling and L. B. talking dial stations, arrangement of cords in both the B1 and A1 handset mountings is similar to Figs. 7 or 8 and the connections as shown in Fig. 21.

## GENERAL

## For Two-Party Selective Message Rate Dial Stations—Party on Tip

### B2 Handset Mounting

Red, blue and double red cord terminals of handset mounting cord are placed underneath cords, as shown, to prevent interference with contact springs.

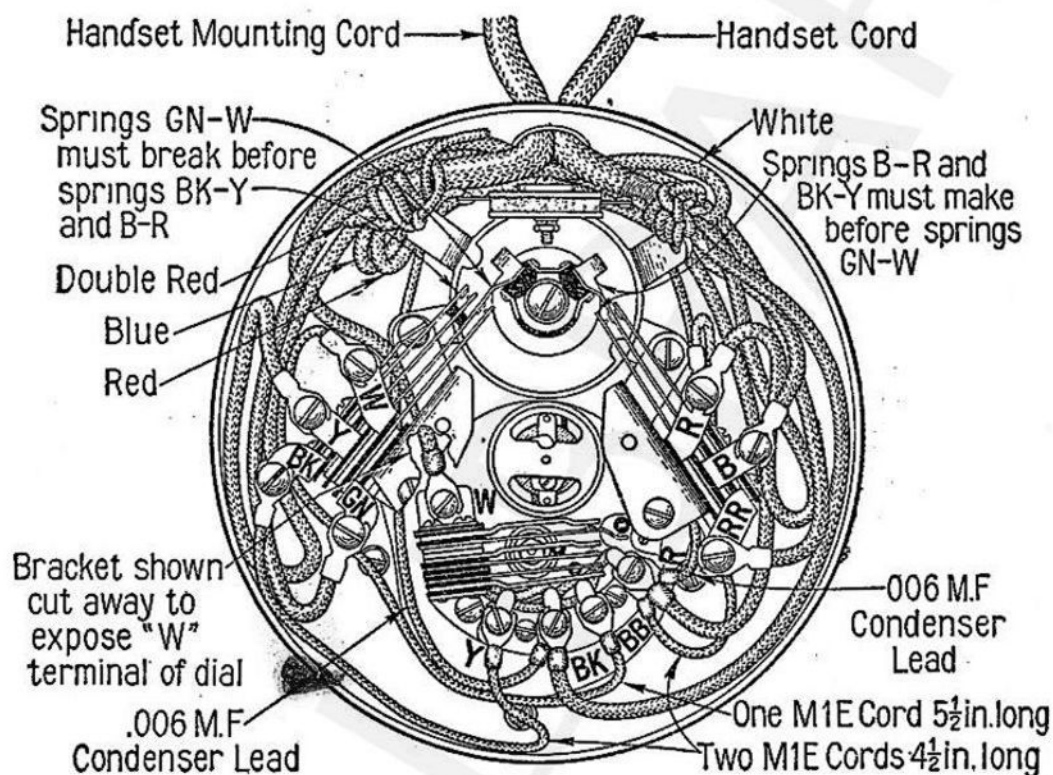


**Fig. 9**

## For Two-Party Selective Message Rate Dial Stations—Party on Tip

### A2 Handset Mounting

Red, blue and double red cord terminals of handset mounting cord and white terminal of handset cord are placed underneath cords, as shown, to prevent interference with contact springs.



**Fig. 10**

Cord tips are placed with flat side down (where joint is shown dark) and up (where shown white), to prevent crosses or grounds.

The B2 and A2 Handset Mountings should always be equipped with the #2H type dial. These mountings are not stocked with apparatus blanks. Therefore, when a hand telephone set is to be installed at a non-dial station which will later be cut-over to dial service requiring a B2 or A2 Handset Mounting, a B1 or A1 Handset Mounting should be installed and a B2 or A2 mounting substituted when the station is cut-over.

## GENERAL

### For Two-Party Selective Message Rate Dial Stations—Party on Ring

#### B1 or A1 Handset Mountings

Apparatus and cords are arranged as shown in Figs. 7 or 8.

### For No. 1 Residence System and No. 2 Private Branch Exchange Non-Dial Stations

#### B3 Handset Mounting

Red, blue and double red cord terminals of the handset mounting cord and white and black terminals of handset cord are placed underneath cords, as shown, to prevent interference with contact springs.

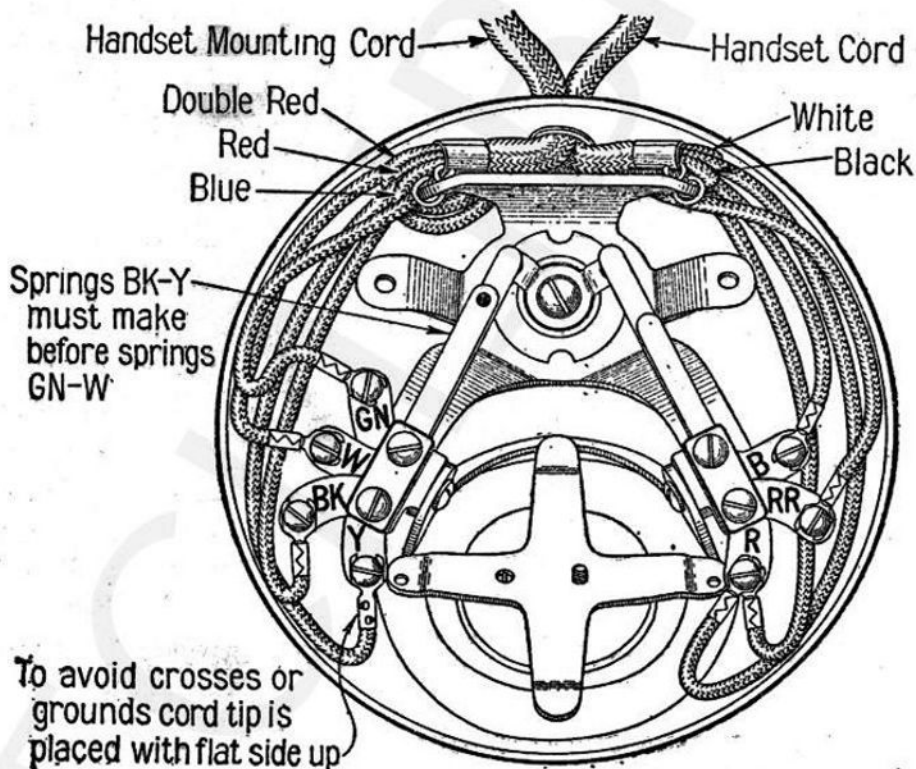
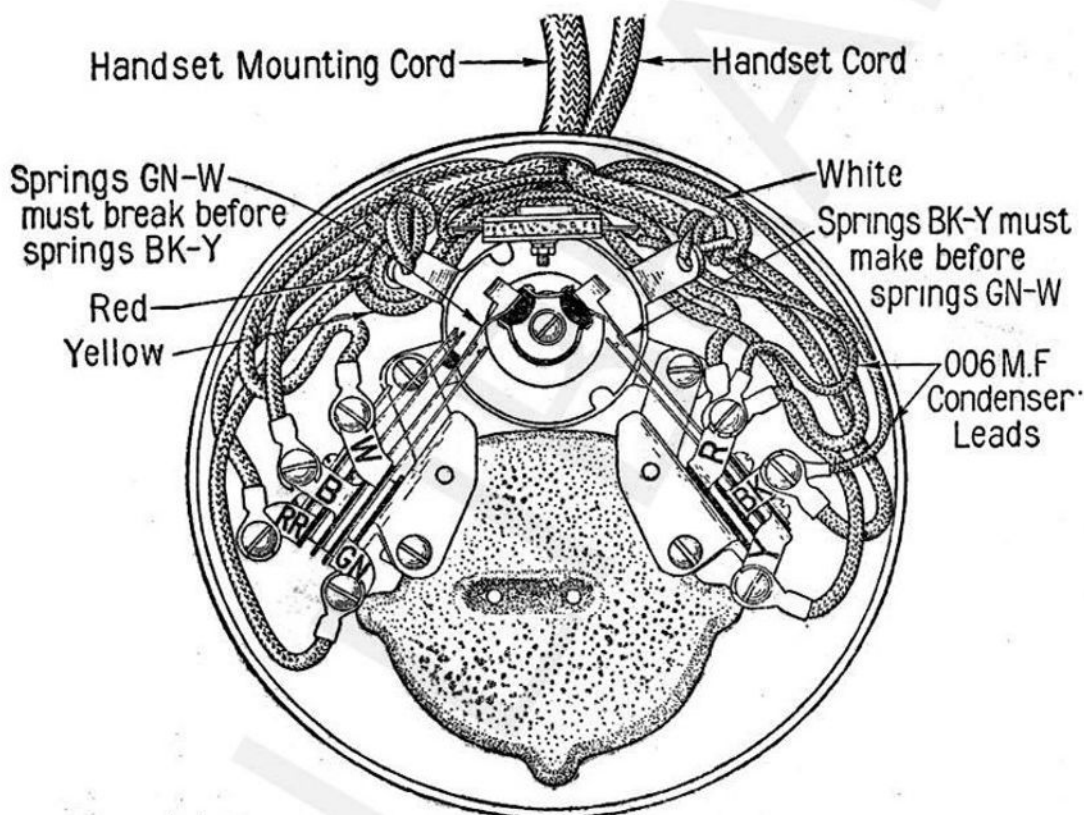


Fig. 11

**For No. 1 Residence System and No. 2  
Private Branch Exchange Non-Dial Stations**

**A3 Handset Mounting**

Yellow and red cord terminals of handset mounting cord and white terminal of handset cord are placed underneath cords, as shown, to prevent interference with contact springs.



**Fig. 12**

Cord tips are placed with flat side up to prevent crosses or grounds.

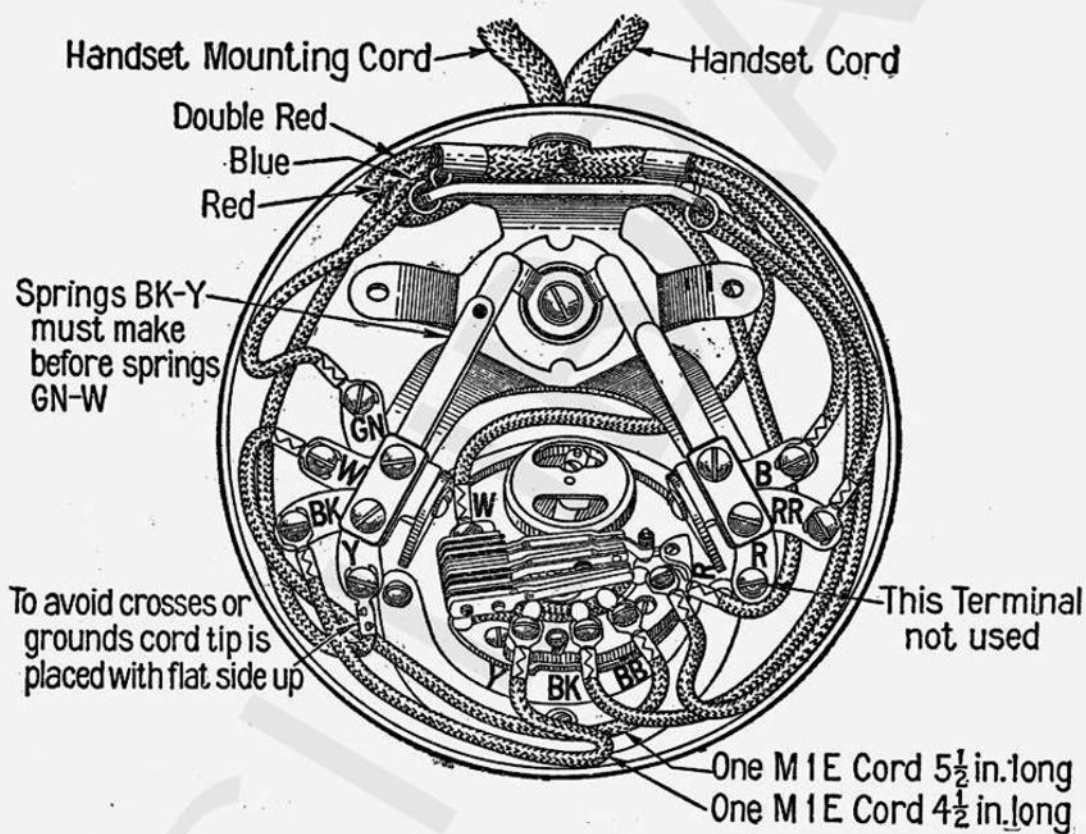


## GENERAL

## For No. 1 Residence System and No. 2 Private Branch Exchange Dial Stations

### B3 Handset Mounting

Red, blue and double red cord terminals of handset mounting cord are placed underneath cords, as shown, to prevent interference with contact springs.



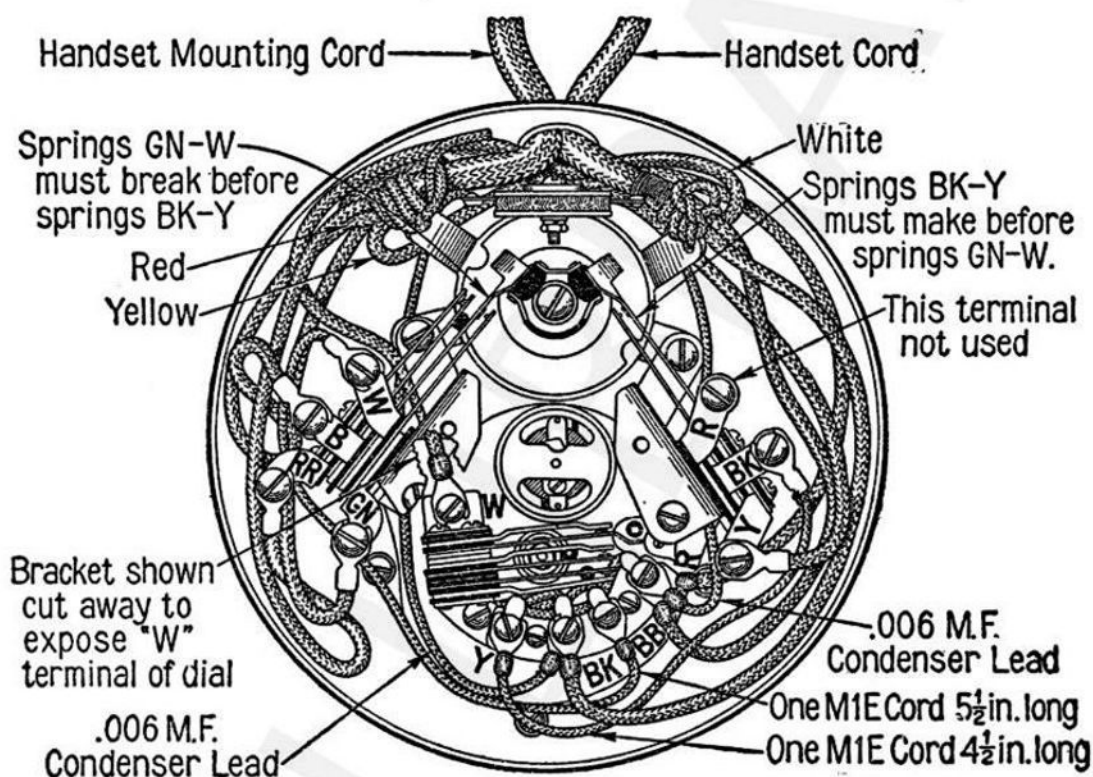
**Fig. 13**



**For No. 1 Residence System and No. 2  
Private Branch Exchange Dial Stations**

**A3 Handset Mounting**

Yellow and red cord terminals of handset mounting cord and white terminal of handset cord are placed underneath cords, as shown, to prevent interference with contact springs.



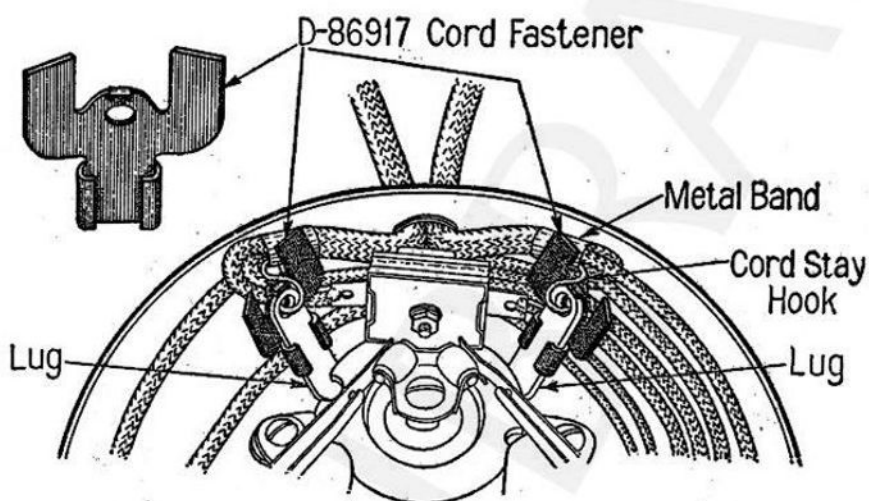
**Fig. 14**

Cord tips are placed with flat side down (where joint is shown dark) and up (where shown white), to prevent crosses or grounds.

## GENERAL

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When a cord with metal cord stay hook is used with A1, A2 or A3 handset mountings, the D-86917 Cord Fastener shall be used to prevent the metal hook or band from interfering with adjacent parts or grounding current carrying parts of the mounting.

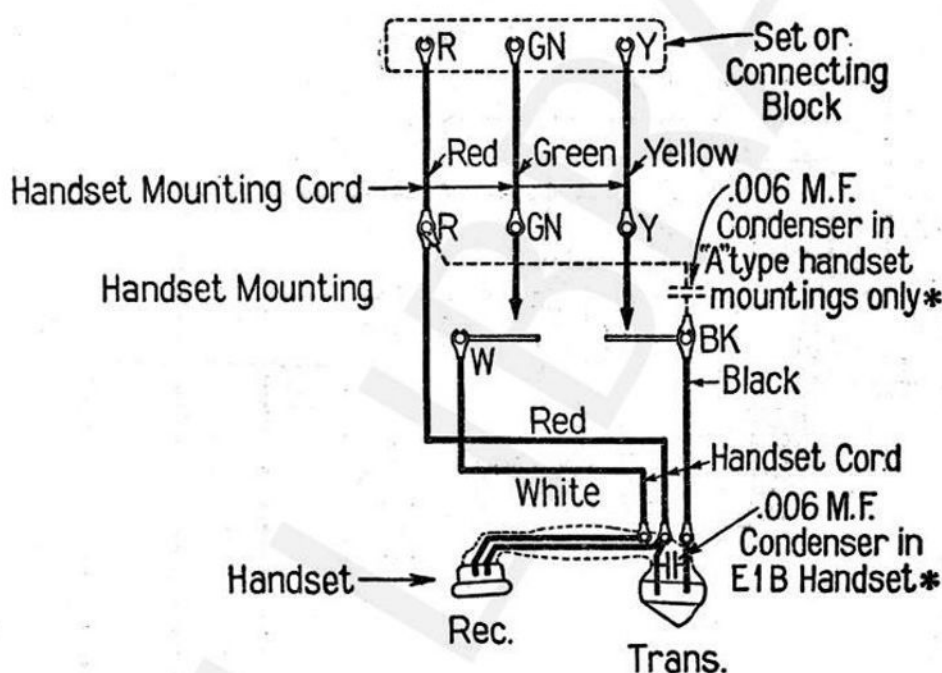


Slide cord fastener on lug and attach cord stay hook which prevents fastener from coming off lug.

**Fig. 15**

**5. Connections.** See that handsets, handset mountings and associated apparatus are connected according to the following figures. These figures are intended to show the correct connections of the cords. They are not intended to illustrate the actual arrangement of terminals, springs, etc., which are different in the "A" and "B" type mountings.

### C. B. Non-Dial and Magneto Stations with B1 or A1 Handset Mountings



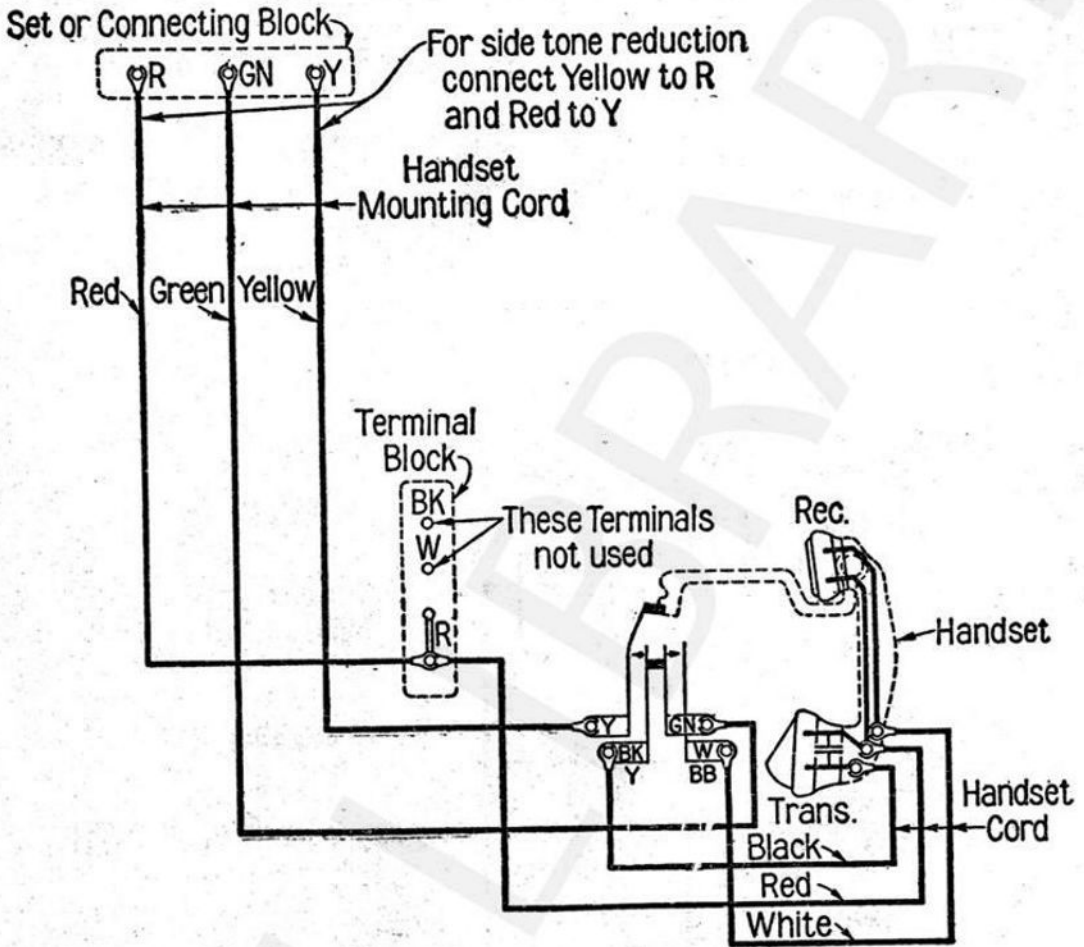
**Fig. 16**

For side tone reduction at C. B. Non-Dial Stations, connect yellow cord to R and red cord to Y.

\* There must be a .006 MF condenser either in the handset or the handset mounting. There may be a condenser in both handset and mounting. Therefore, the E1B Handset (which has a condenser) may be used with any type of handset mounting but the E1A Handset (which has no condenser) must be used with the "A" type mountings only.

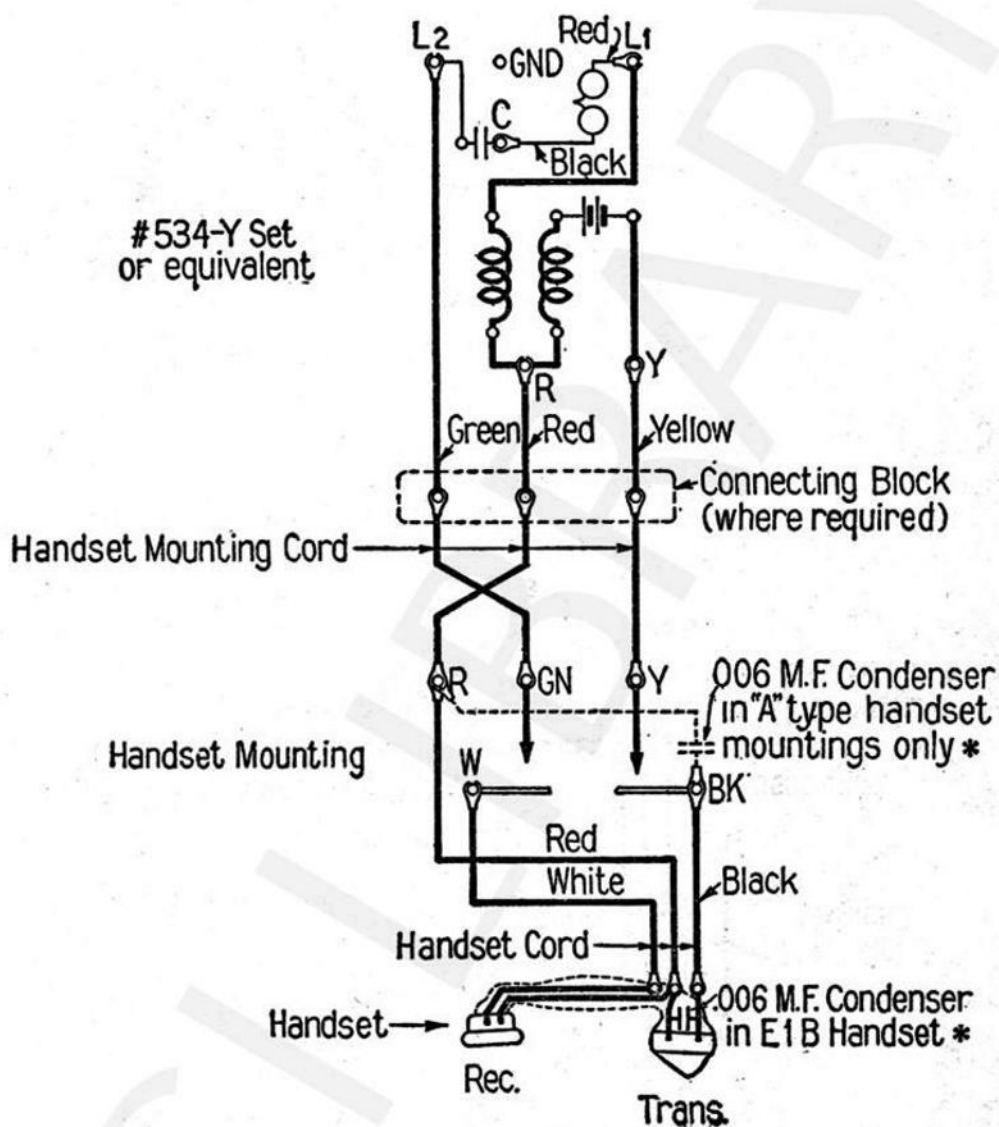
GENERAL

**C. B. Non-Dial and Magneto Stations  
with C1 Handset Mounting and E1B Handset**



**Fig. 17**

### C. B. Signaling, Local Battery Talking Non-Dial Stations with B1 or A1 Handset Mountings

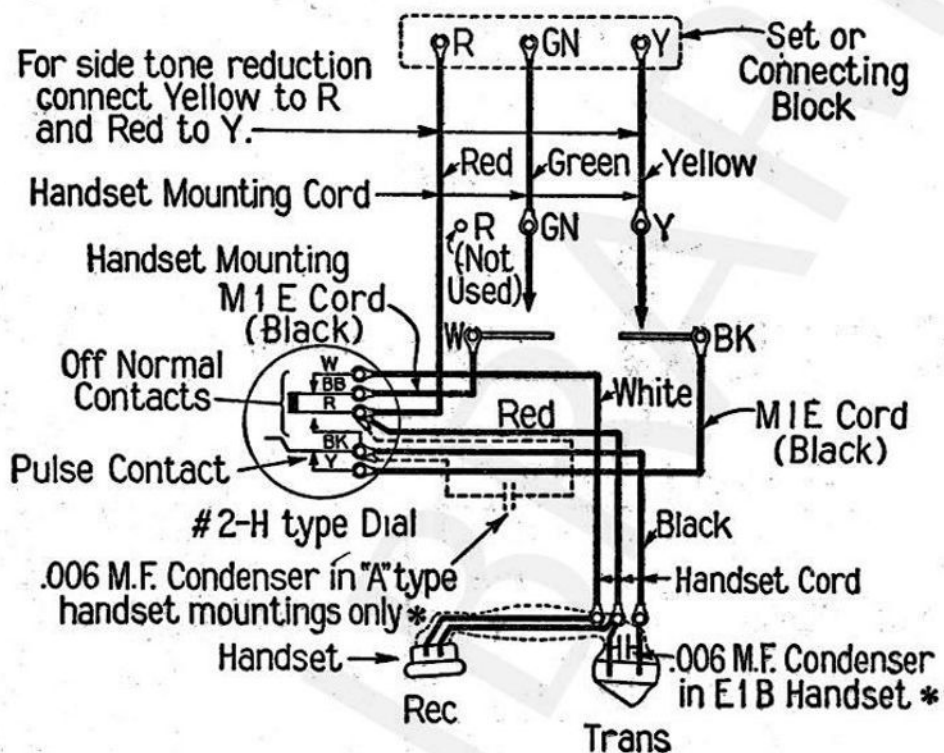


**Fig. 18**

\* See note, page 23.

**GENERAL**

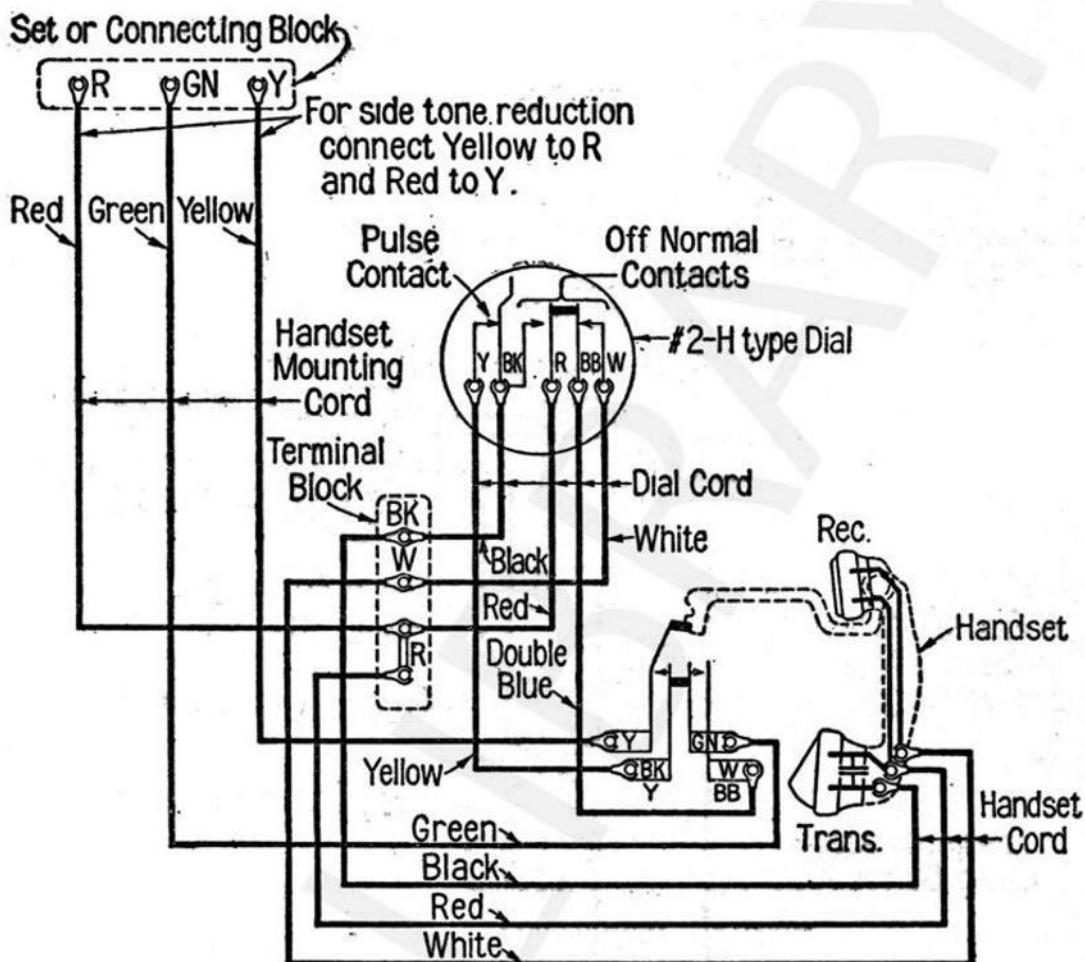
### C. B. Talking Dial Stations with B1 or A1 Handset Mountings

**Fig. 19**

See note, page 23.



## C. B. Talking Dial Stations with C1 Handset Mounting and E1B Handset



**Fig. 20**

## GENERAL

# Local Battery Talking Dial Stations with B1 or A1 Handset Mountings

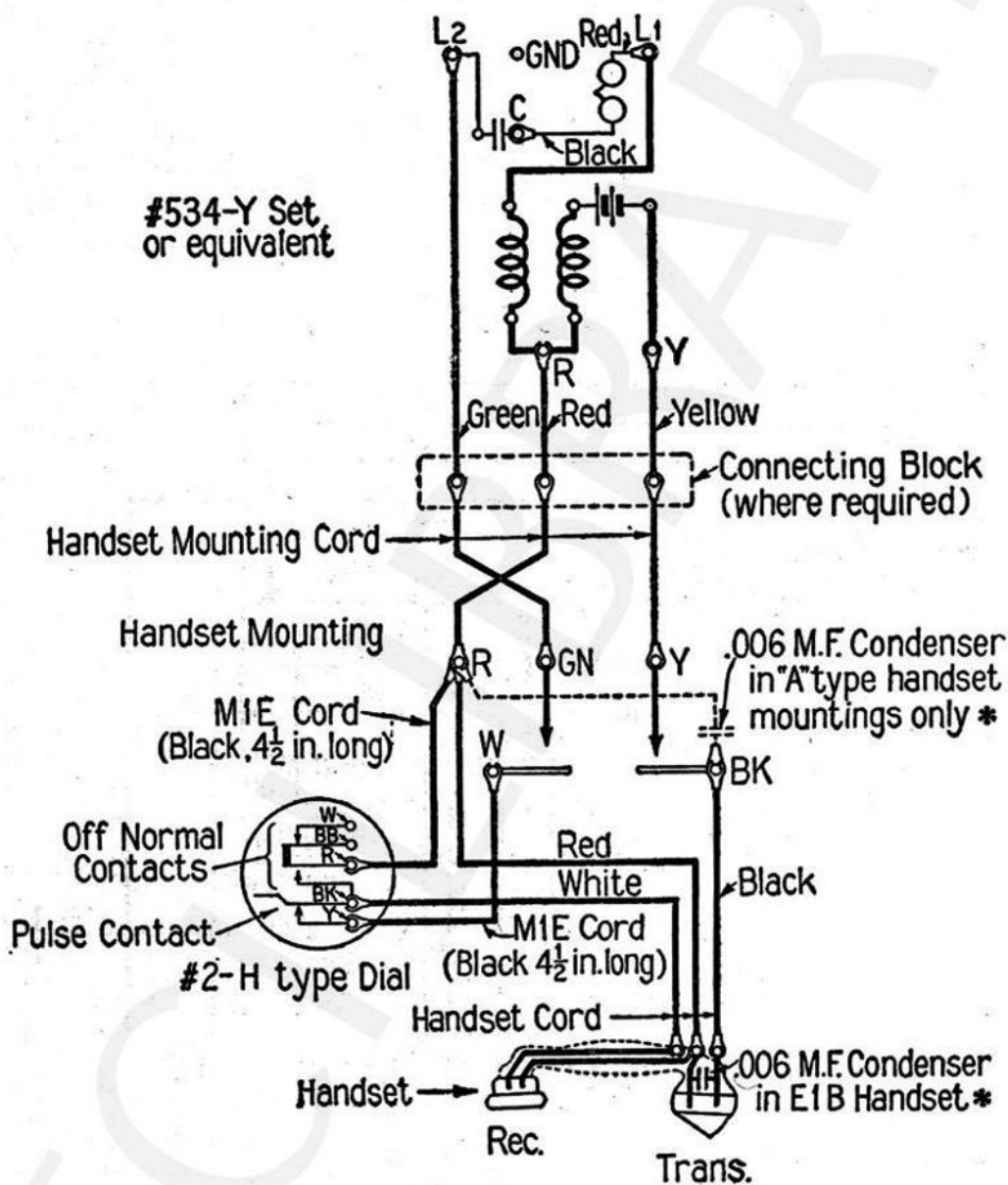
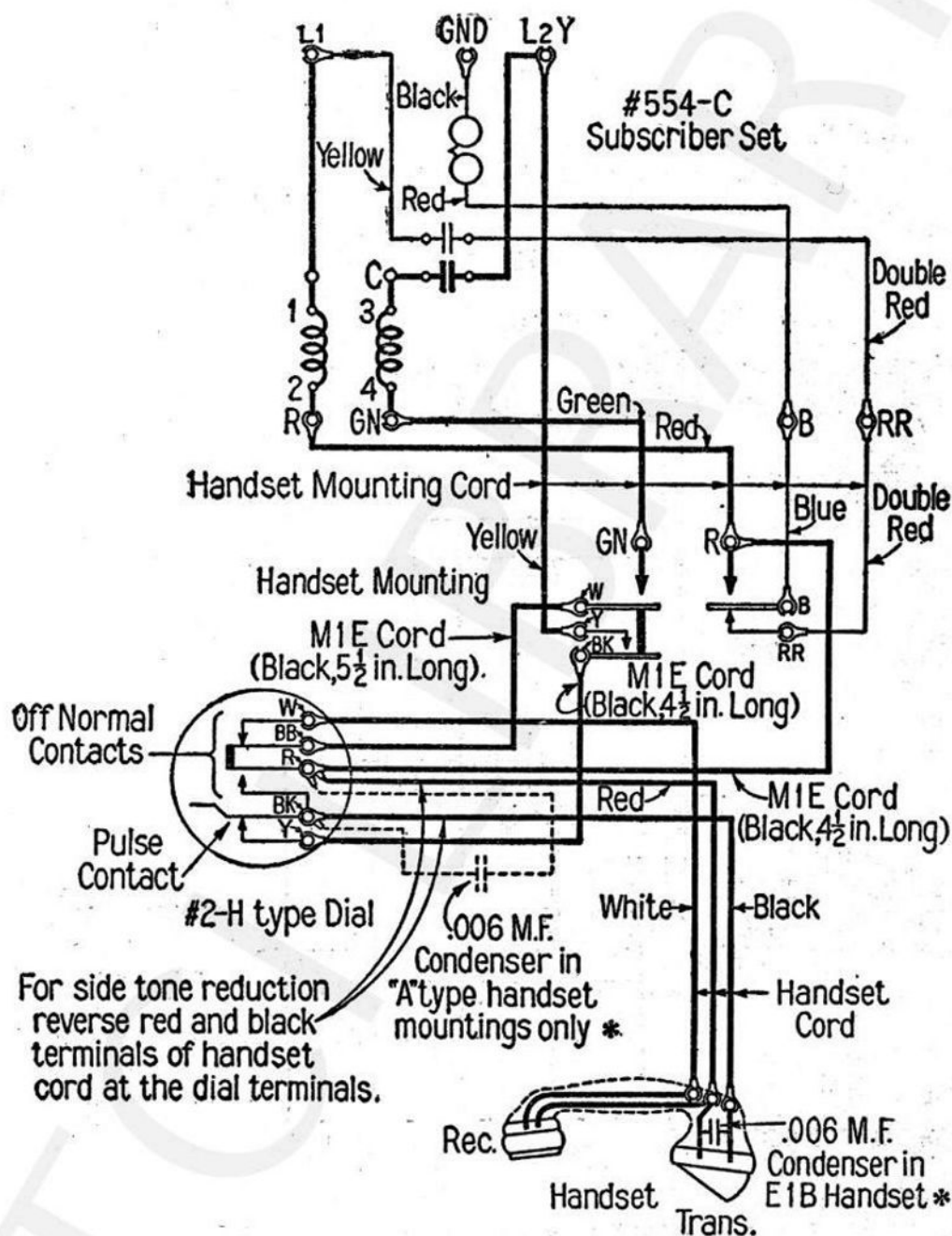


Fig. 21

See note, page 23.

# **Two-Party Selective Message Rate Dial Stations—Party on Tip, with B2 or A2 Handset Mountings**

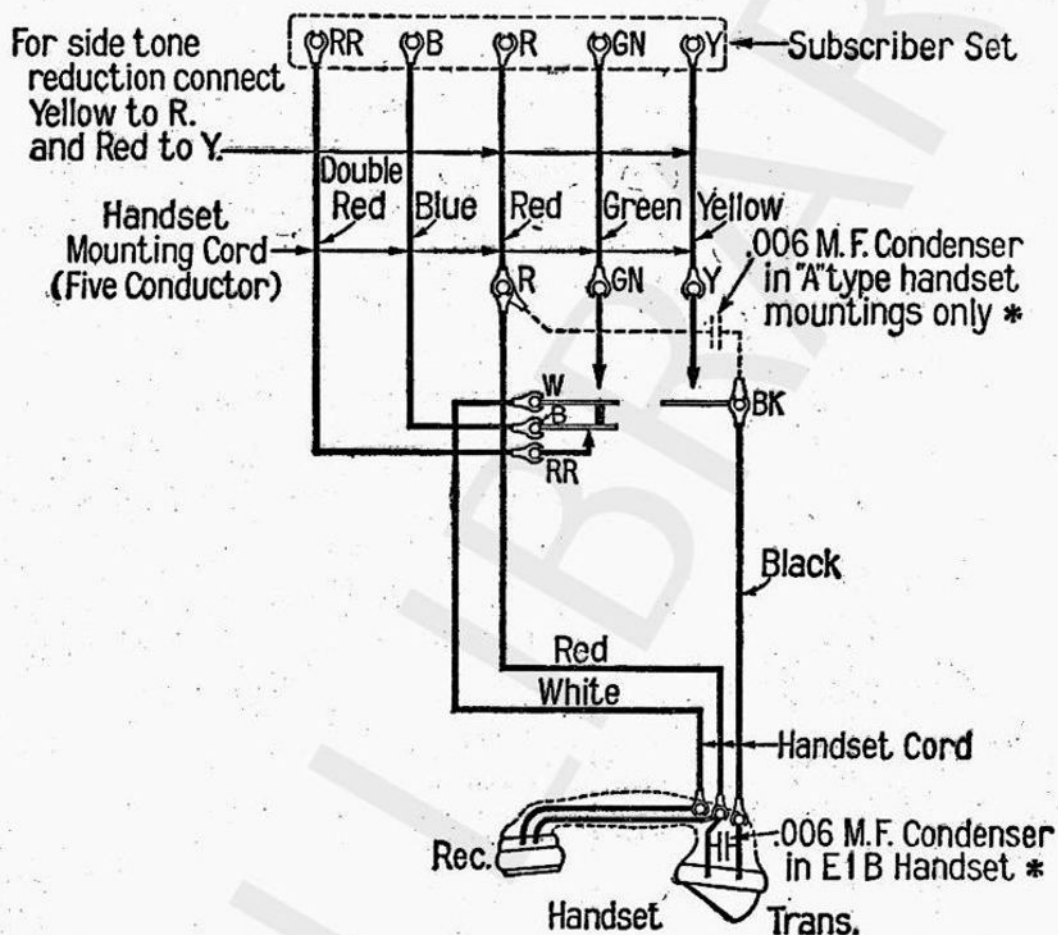


**Fig. 22**

\* See note, page 23.

## GENERAL

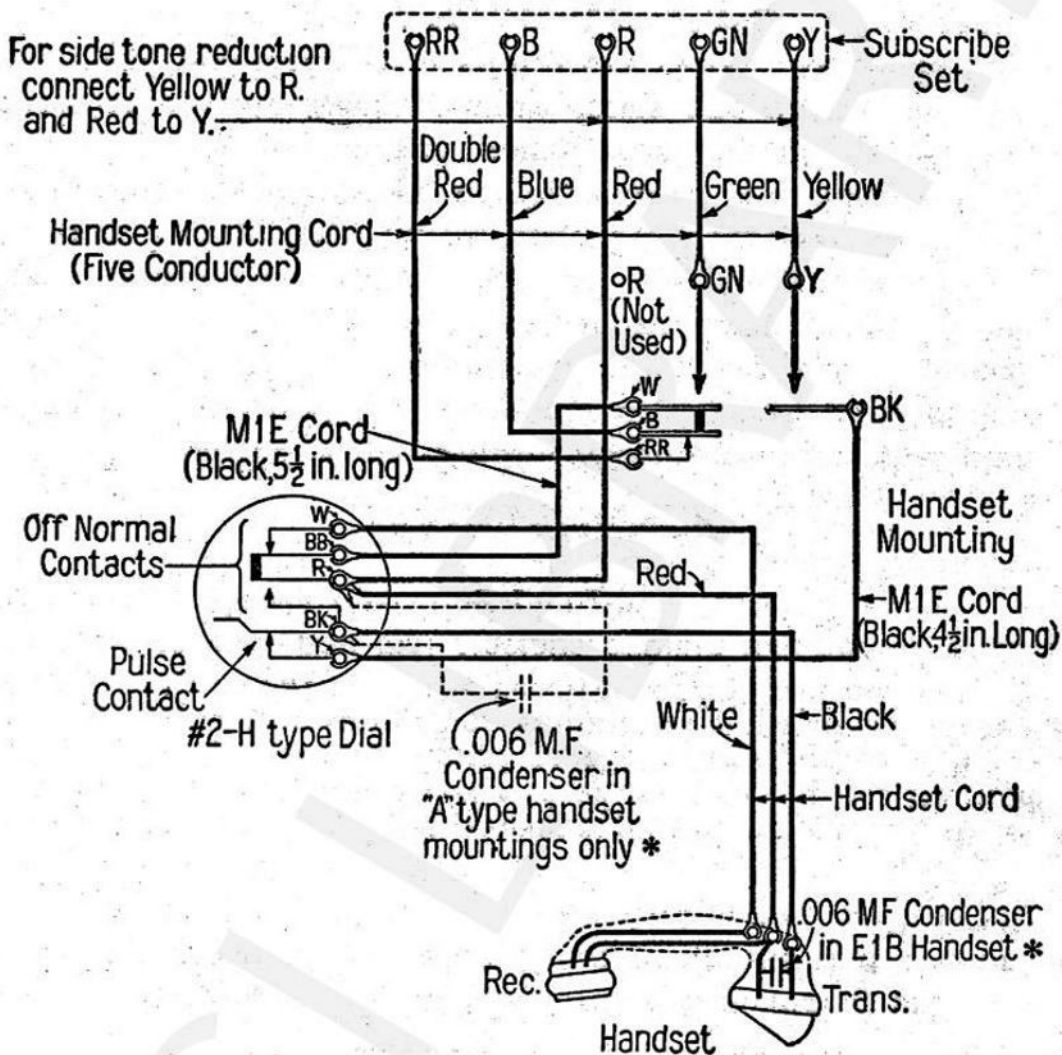
# **No. 1 Residence System and No. 2 Private Branch Exchange Non-Dial Stations with B3 or A3 Handset Mountings**



**Fig. 23**

\* See note, page 23.

# **No. 1 Residence System and No. 2 Private Branch Exchange Dial Stations with B3 or A3 Handset Mountings**



**Fig. 24**

\* See note, page 23.

## GENERAL

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**6. Tests.** After a handset has been installed, make the usual installation tests with the Central Office.

### **STATION WIRING**

**7. Install station wiring** according to separate specifications covering STATION WIRING.

### **INSTRUCTIONS TO SUBSCRIBERS**

**8. Explain use of hand telephone set,** including proper way to hold handset when talking, and point out that the proper position for the handset on the handset mounting is as shown in Figs. 1, 2 or 3.

**Note:** If handset is improperly placed on cradle, so as to cause contacts GN and W to open but not BK and Y, a permanent signal at the central office will result and the subscriber cannot be notified by means of the howler, as the receiver circuit will be open.

In the case of non-dial stations explain manner of recalling operator by slowly operating plunger.

### **MAINTENANCE**

**9. "B" and "A" Type Handset Mountings.** See that plunger operates freely and that it moves down until handset handle rests firmly on the end supports when handset is placed on mounting. If plunger does not move down properly due to excess tension on the contact springs, readjust springs. See **Contact Spring Adjustment**, page 34. Also, see that plunger moves up to the proper height without a tendency to stick when handset is removed slowly from mounting. If plunger does not operate freely, remove screw and plunger bracket at lower end and clean stem with a dry cloth. Assemble plunger with nickel silver guides at rear of mounting. When replacing plunger bracket make sure that Bakelite washer is first placed on shaft and that split washer is placed under screw. If plunger does not operate properly after cleaning, replace handset mounting.



### **Sequence of Make and Break.**

Clicks in the receiver when signaling the operator (with ringer or relay in set temporarily disconnected) indicates that the sequence of the make and break of the contact springs in the base of the handset mounting is incorrect. The proper sequence is as follows:

Springs GN and W—Must break before springs BK and Y on down stroke of plunger, and

Springs BK and Y—Must make before springs GN and W on up stroke.

In addition, on the B2 and A2 Handset Mountings:

Springs B and R—Must make before springs GN and W on up stroke.

If sequence is incorrect, remove base of mounting and proceed as follows:

#### **With B1, B2 and B3 Handset Mountings**

Bend the spring or springs requiring adjustment at a point near the spring assembly with #143 tool (or equivalent) until proper sequence is obtained as given above. In selecting the spring on which to make the adjustment, use one which is not operated by the plunger, wherever possible. Springs must show perceptible follow after making.

#### **With A1, A2 and A3 Handset Mountings**

See that tips of springs are shaped as shown in Figs. 5, 8, 10, 12 or 14 (if not, bend with #143 tool, or equivalent, to proper shape) and then bend the spring or springs requiring adjustment with #143 tool (or equivalent) until proper sequence is obtained as given above. In selecting the spring on which to make the adjustment, use one which is not operated by the plunger, wherever possible. Springs must show perceptible follow after making.

## MAINTENANCE

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### **Contact Spring Adjustment.**

In case of a permanent signal at the central office (with handset in proper position on mounting) or loss of connections with machine switching, trouble may be due to improper adjustment of springs in base of mounting. The correct adjustment is as follows:

#### **With B1, B2 and B3 Handset Mountings**

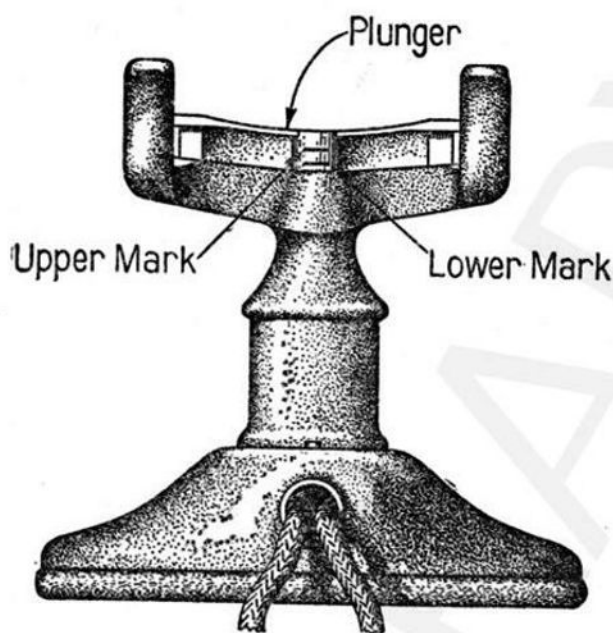
The contact springs should operate before the plunger reaches the extreme end of its downward travel, in order to ensure proper contact margins.

Connect test set to terminals R and Y (preferably at the set or connecting block). At non-dial stations instruct operator to disregard permanent signal. Depress plunger of handset mounting to full extent and let it come up slowly while listening to the receiver of the test set. A click, indicating that springs BK and Y have closed, should not be heard in the test set receiver until the plunger has risen about 1/16 inch. If the click does not occur at the proper time, bend the tip of the longest spring (W) with #143 tool (or equivalent) until proper adjustment is secured.

See that the sequence of make and break of the contact springs is correct as given on page 33.

#### **With A1 and A3 Handset Mountings**

Depress plunger from upper position while listening in handset receiver until "Lower Mark" (Fig. 25) is about to disappear and make sure that receiver circuit is not interrupted. If interruption occurs, indicating that springs GN and W have opened, readjust these springs (with #143 tool or equivalent) to remain closed until "Lower Mark" is about to disappear. Then, if necessary, readjust springs BK and Y (with #143 tool, or equivalent) for proper sequence with springs GN and W as given on page 33.



**Fig. 25**

Connect test set on terminals R and Y (preferably at the set or connecting block). At non-dial stations instruct operator to disregard permanent signal. Depress plunger of handset mounting to full extent and let it come up slowly while listening to the receiver of the test set. A click should not be heard in the test set receiver until after the "Upper Mark" appears, indicating that springs BK and Y have closed. If the click does not occur at proper time, adjust springs BK and Y. After proper adjustment of springs BK and Y is secured, test sequence again (see page 33) and adjust springs GN and W, if necessary, making certain that both sets of contacts have made when "Lower Mark" appears.

Make sure that contact springs have perceptible follow after contact.

### **With A2 Handset Mounting**

See that springs GN and W, BK and Y meet the requirements given above for these springs on the A1 and A2 Handset Mountings. In addition, see that sequence between springs GN-W and B-R is as given on page 33.

## MAINTENANCE

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**10. Handsets.** If handset (E1A or E1B) or any part of it is defective, replace handset with a new one. If the receiver cap is loose, tighten with the hand. If any other parts are loose, replace the handset. Loose handset parts may cause interactions between the transmitter and receiver of the handset, resulting in a continuous howling sound from the receiver. If this occurs, replace handset.

**11. Cords.** Maintain handset mounting cords according to the usual practice for desk stand cords.

**12. Dials.** Maintain #2-H type dials in the same manner as #2-A type dials (see MACHINE SWITCHING STATIONS).

**13. Replacement of Parts.** If necessary to replace handset, handset mounting, or handset mounting cord, make sure that new connections are according to Section 5.