

# NO. 5 CROSSBAR DIAL TELEPHONE SYSTEM COMPLETION OF A CALL

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HAWTHORNE WORKS

*Personnel Service Branch*

*Training Department*



WESTERN ELECTRIC COMPANY, INC.  
HAWTHORNE WORKS  
PERSONNEL SERVICE BRANCH

TRAINING DEPARTMENT  
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## CROSSBAR NO. 5 DIAL TELEPHONE SYSTEM

### COMPLETION OF A CALL

THIS BULLETIN IS ISSUED TO PRESENT CROSSBAR NUMBER 5 FRAME TERMINOLOGY AND TO ILLUSTRATE THE SEQUENCE IN WHICH THESE FRAMES ARE USED IN COMPLETING A SUBSCRIBER CALL. INFORMATION CONTAINED HEREIN IS TO BE USED FOR EDUCATIONAL PURPOSES ONLY.

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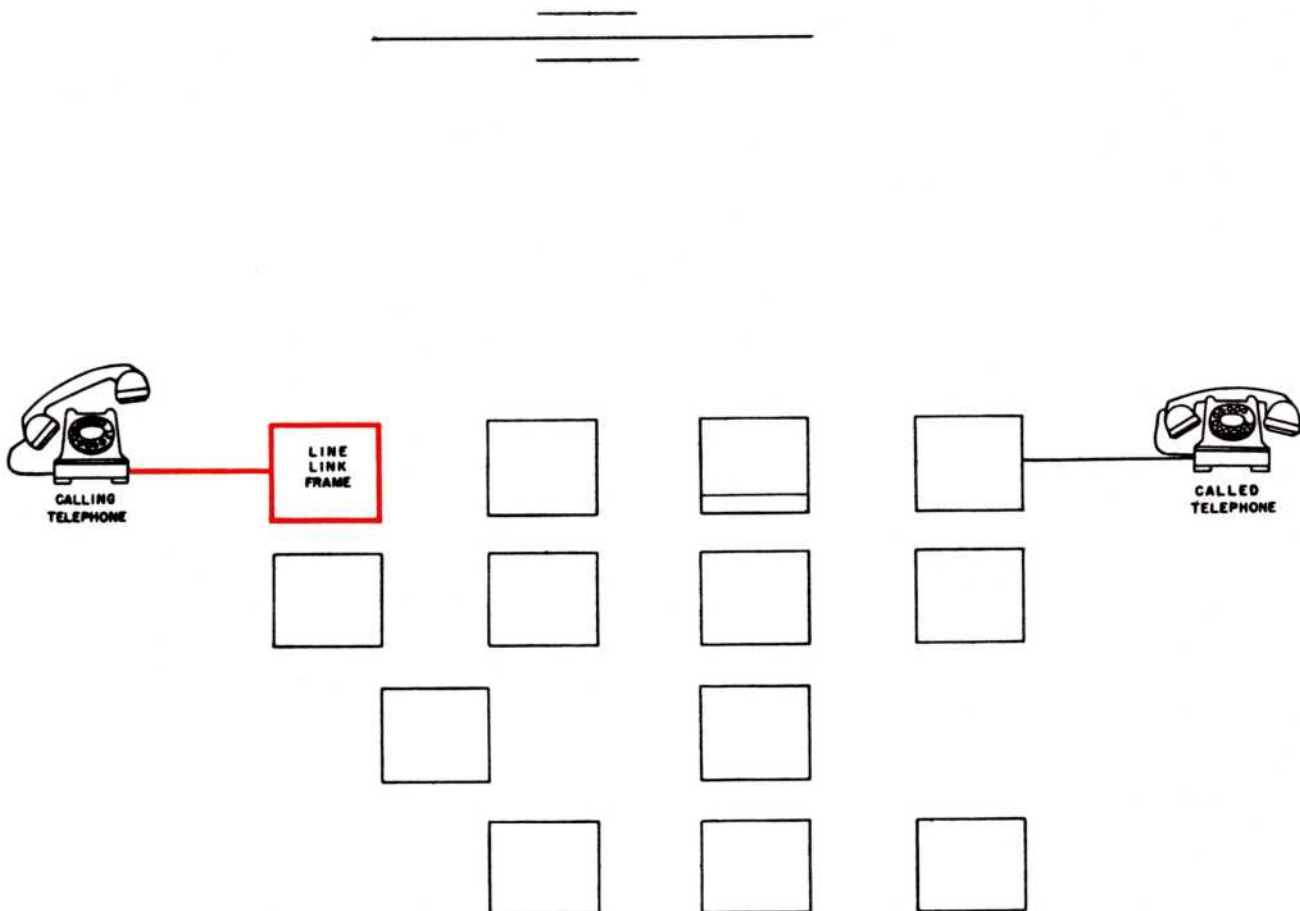
<u>SKETCH</u>	<u>TITLE</u>
1.	CALLING SUBSCRIBER REMOVES HANDSET.
2.	LINE LINK FRAME SELECTS AN IDLE MARKER.
3.	MARKER CHECKS ALL TRUNK LINK FRAMES FOR IDLE ORIGINATING REGISTERS.
4.	MARKER SEIZES TRUNK LINK AND CALLING LINE LINK FRAMES.
5.	MARKER SELECTS A DIALING CHANNEL TO THE ORIGINATING REGISTER.
6.	SUBSCRIBER DIALS.
7.	ORIGINATING REGISTER SEIZES AN IDLE MARKER.
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10.	MARKER SEIZES THE CALLED LINE NUMBER GROUP FRAME.
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### BIBLIOGRAPHY

BELL SYSTEM PUBLICATIONS

## COMPLETION OF A CALL

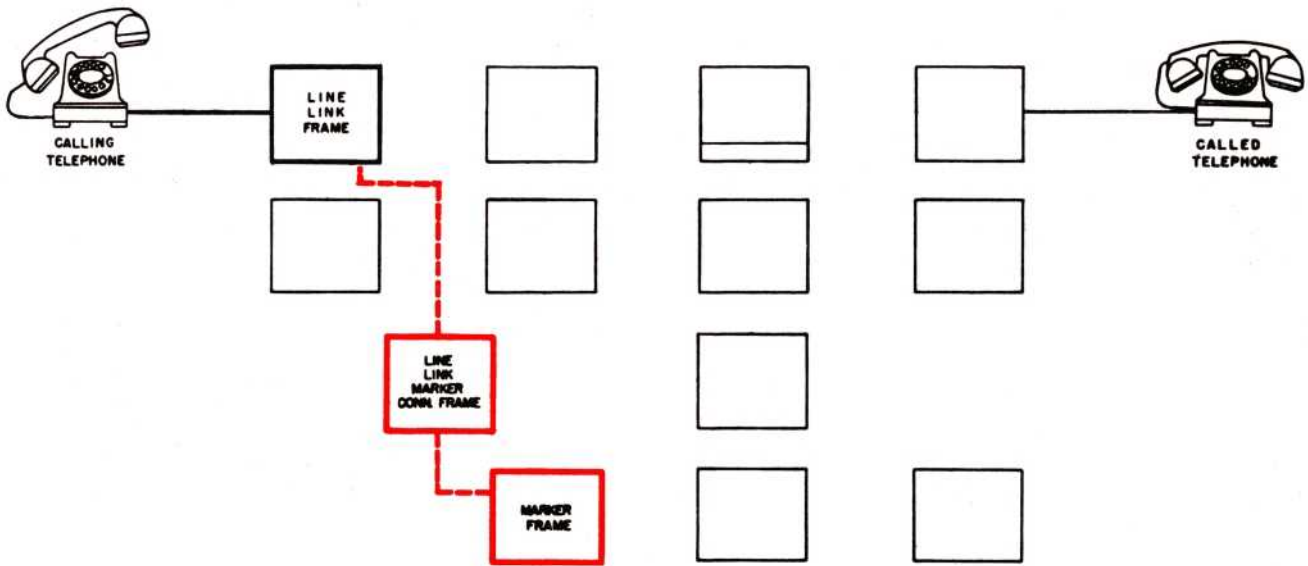
SKETCHES ONE TO FOURTEEN SHOW THE VARIOUS STAGES IN THE SETTING UP OF A CALL BETWEEN TWO SUBSCRIBERS IN THE SAME CROSSBAR NO. 5 DIAL SYSTEM OFFICE. SKETCH FIFTEEN SHOWS ALL THE FRAMES REQUIRED IN COMPLETING THIS CALL. IN ORDER THAT THE READER MAY CONTINUALLY HAVE BEFORE HIM THE NAMES OF ALL FRAMES USED, IT IS SUGGESTED THAT THE LAST PAGE, CONTAINING SKETCH FIFTEEN, BE LEFT OPEN WHILE FOLLOWING THRU THE VARIOUS STAGES.



### SKETCH 1

#### CALLING SUBSCRIBER REMOVES HANDSET

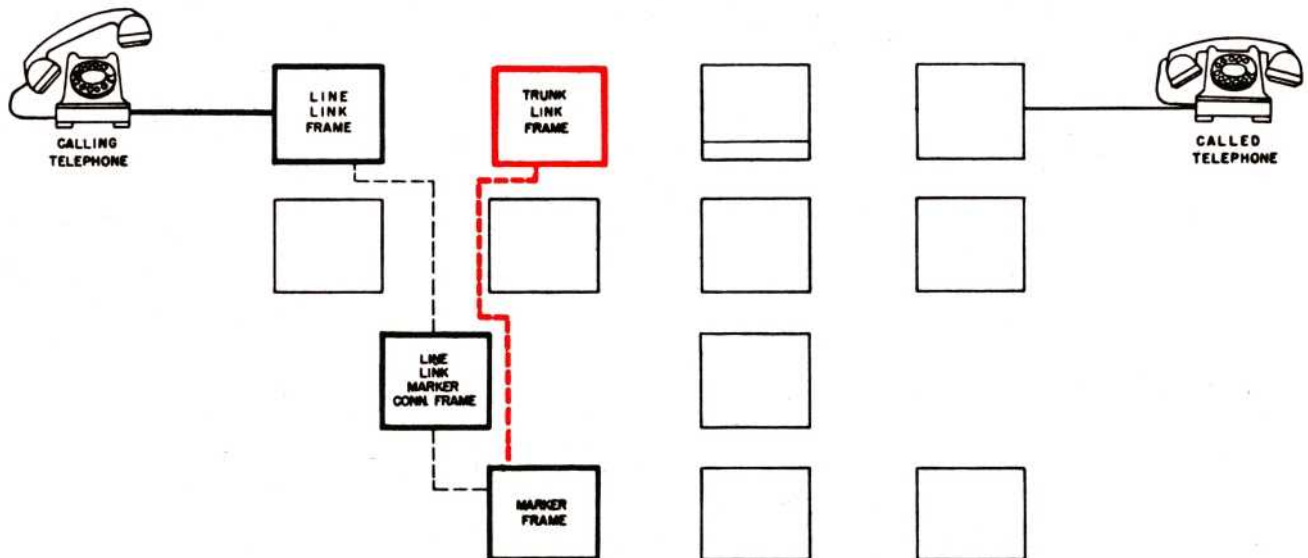
THE CALLING SUBSCRIBER ORIGINATES A CALL BY LIFTING THE HANDSET, COMPLETING A PATH FROM HIS SUBSET TO THE LINE LINK FRAME UPON WHICH HIS LINE IS LOCATED.



SKETCH 2

LINE LINK FRAME SELECTS AN IDLE MARKER

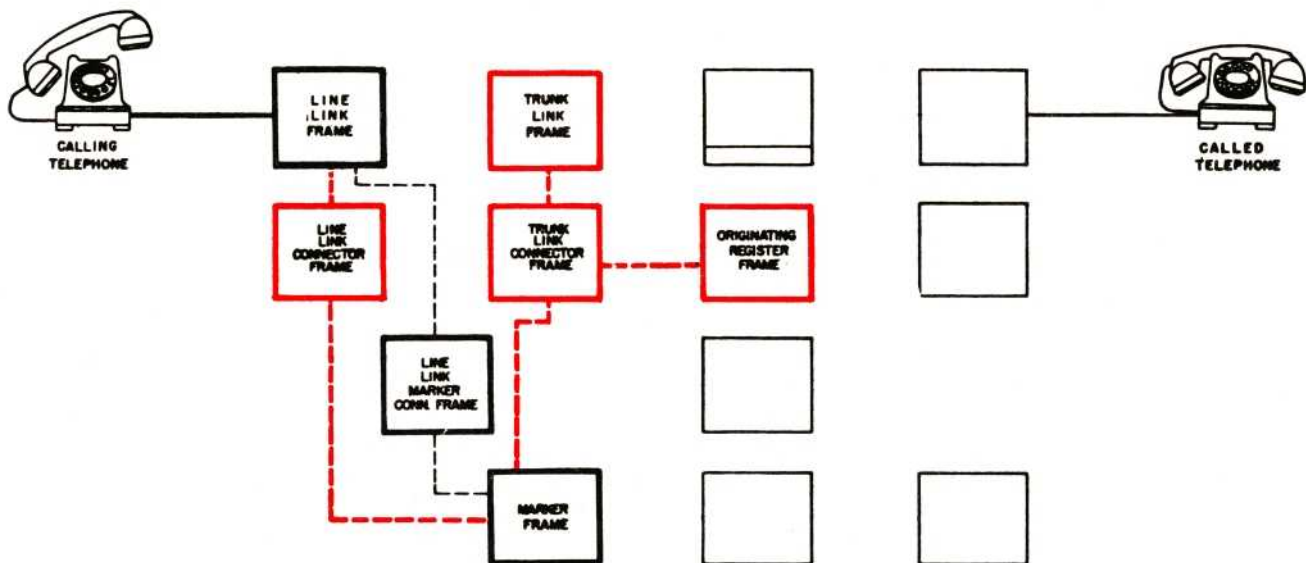
THE CALLING LINE LINK FRAME SEIZES AND CONNECTS TO AN IDLE MARKER THROUGH THE LINE LINK MARKER CONNECTOR FRAME. CERTAIN INFORMATION TO BE USED LATER IN AGAIN LOCATING THE CALLING LINE LINK FRAME AND LINE IS GIVEN TO THE MARKER.



SKETCH 3

MARKER CHECKS ALL TRUNK LINK FRAMES FOR IDLE ORIGINATING REGISTERS

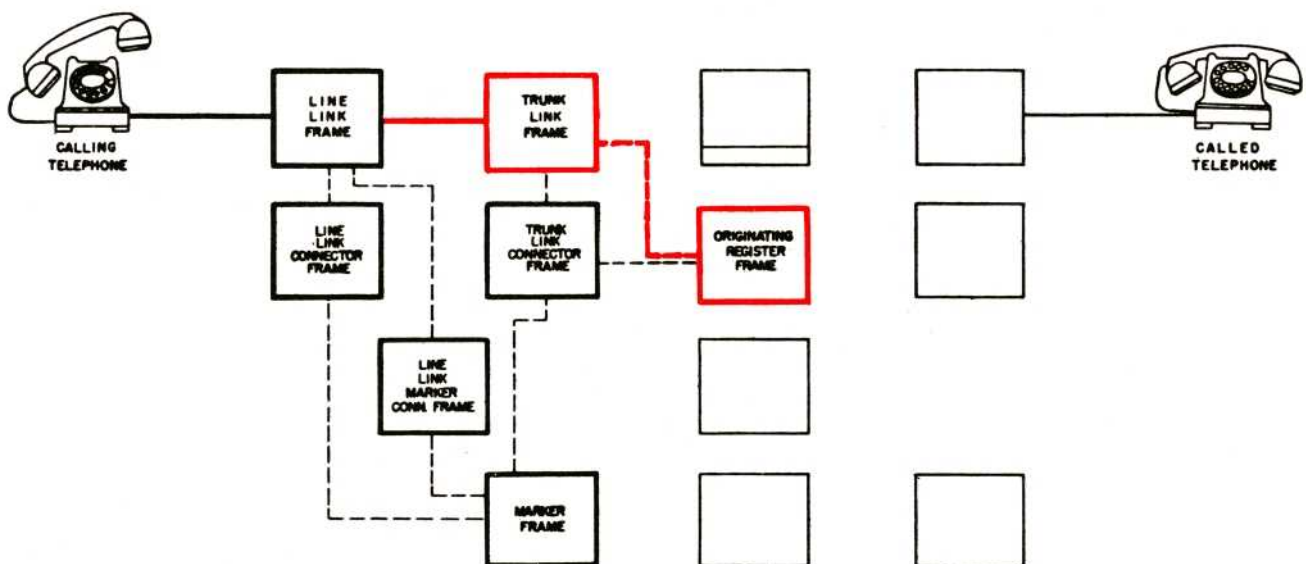
THE MARKER RECOGNIZES THE CALL AS BEING FROM A LINE LINK FRAME, AND IT THEREFORE CHECKS ALL TRUNK LINK FRAMES FOR IDLE ORIGINATING REGISTERS. AN IDLE TRUNK LINK FRAME WITH IDLE ORIGINATING REGISTERS WILL BE SELECTED.



SKETCH 4

MARKER SEIZES TRUNK LINK AND CALLING LINE LINK FRAMES

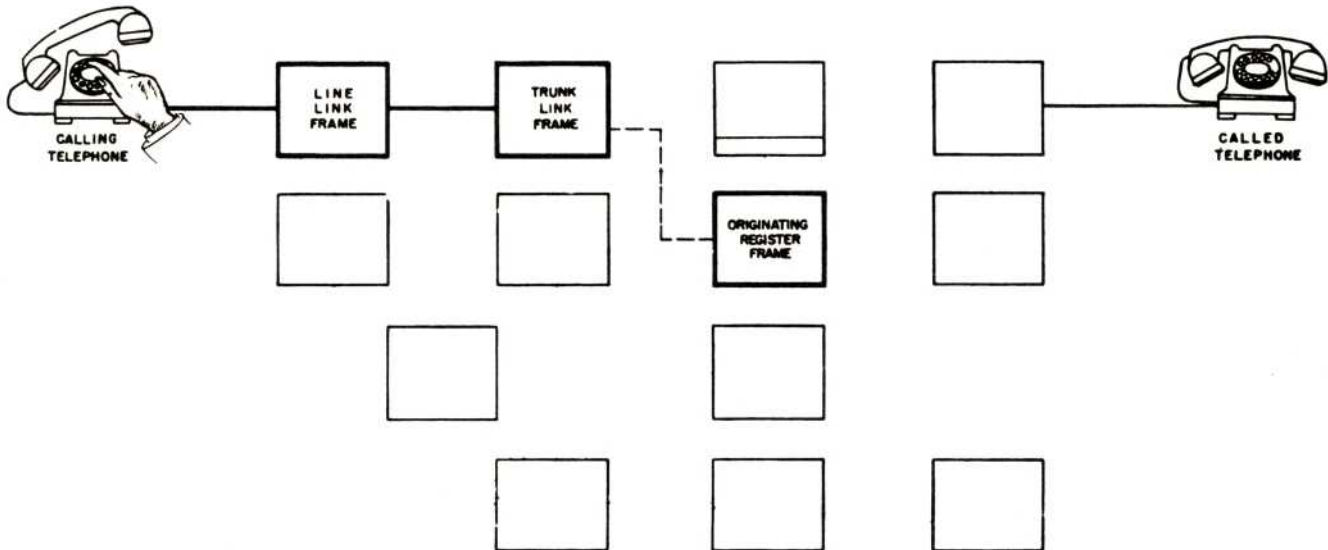
THE MARKER SEIZES THE SELECTED TRUNK LINK FRAME THROUGH THE TRUNK LINK CONNECTOR FRAME AND THEN, WHILE SELECTING AN IDLE ORIGINATING REGISTER, PROCEEDS TO ALSO SEIZE THE CALLING LINE LINK FRAME THROUGH THE LINE LINK CONNECTOR FRAME. COMPLETE INFORMATION ABOUT THE CALLING LINE LOCATION IN THE LINE LINK FRAME AND ITS CLASS OF SERVICE IS PASSED FROM THE LINE LINK FRAME TO THE MARKER, FROM WHERE IT IS PASSED ON TO THE ORIGINATING REGISTER.



SKETCH 5

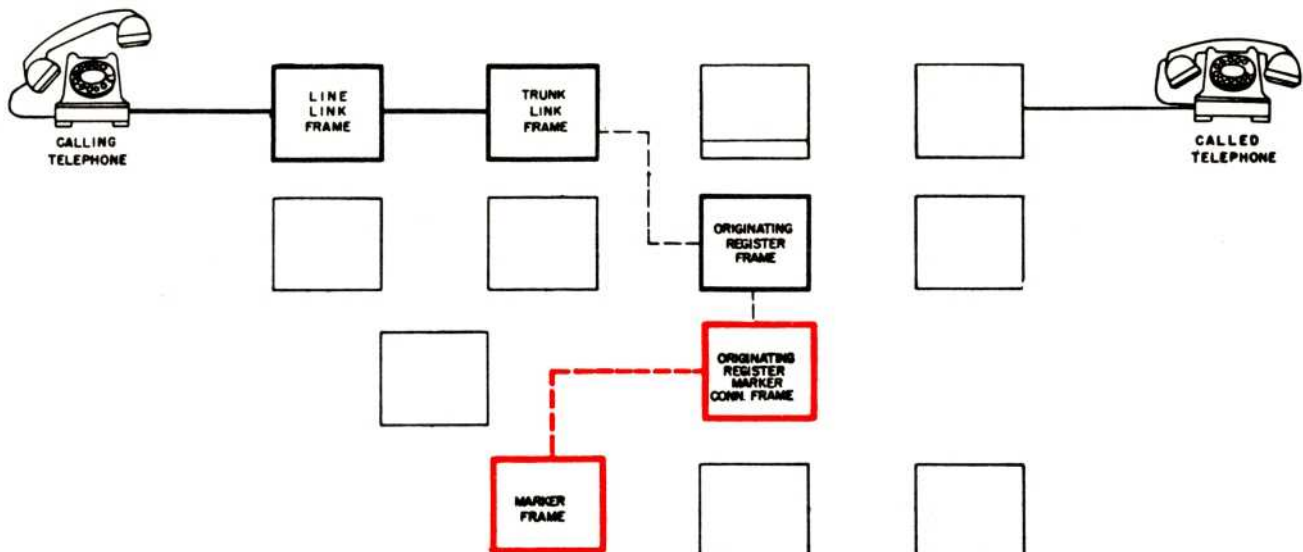
MARKER SELECTS A DIALING CHANNEL TO THE ORIGINATING REGISTER

THE MARKER SELECTS THE COMBINATION OF CIRCUITS THRU THE CALLING LINE LINK FRAME AND TRUNK LINK FRAME (DIALING CHANNEL) TO BE USED. THE CONNECTION FROM THE CALLING SUBSCRIBER TO THE ORIGINATING REGISTER IS CLOSED THRU THE DIALING CHANNEL BY THE MARKER. THE ORIGINATING REGISTER RETURNS DIAL TONE TO THE SUBSCRIBER. AFTER STORING THE NUMBER OF THE LINE LINK PORTION OF THE DIALING CHANNEL IN THE ORIGINATING REGISTER, THE MARKER RELEASES, AS DO THE THREE CONNECTOR FRAMES.



SKETCH 6  
SUBSCRIBER DIALS

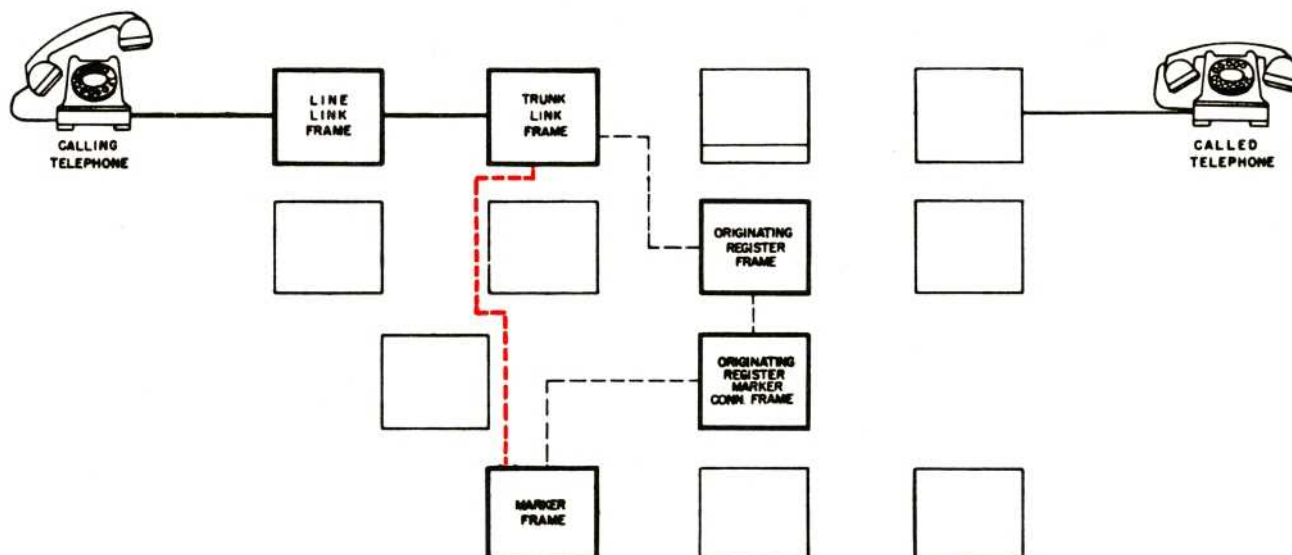
THE CALLING SUBSCRIBER RECEIVES DIAL TONE FROM THE ORIGINATING REGISTER, AND PROCEEDS TO DIAL THE DIGITS ST 2 4000. THE ORIGINATING REGISTER STORES THESE DIGITS IN THEIR DIALED SEQUENCE.



SKETCH 7  
ORIGINATING REGISTER SEIZES AN IDLE MARKER

THE ORIGINATING REGISTER CONNECTS TO AN IDLE MARKER THROUGH THE ORIGINATING REGISTER MARKER CONNECTOR FRAME AND TRANSFERS THE FOLLOWING INFORMATION TO THE MARKER: THE CALLING LINE LOCATION AND ITS CLASS OF SERVICE, THE NUMBER OF THE LINE LINK PORTION OF THE DIALING CHANNEL, AND THE CALLED TELEPHONE NUMBER (ST 2 4000). THE MARKER NOW IN USE MAY OR MAY NOT BE THE SAME ONE PREVIOUSLY USED ON THIS CALL TO ESTABLISH THE DIALING CHANNEL.

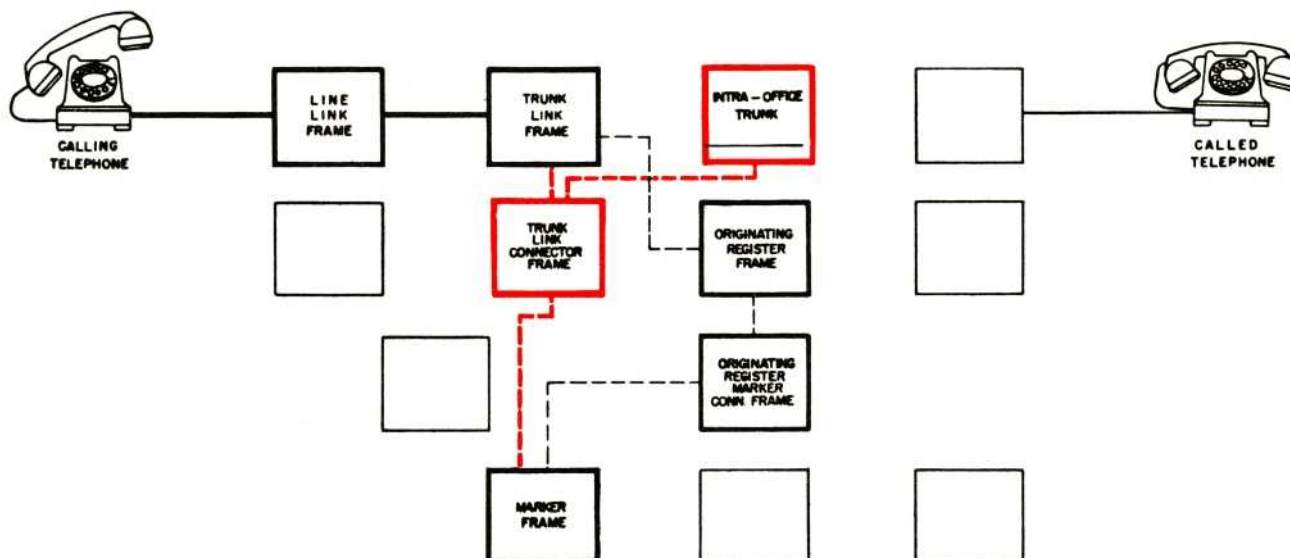




SKETCH 8

MARKER CHECKS ALL TRUNK LINK FRAMES FOR IDLE INTRA-OFFICE TRUNKS

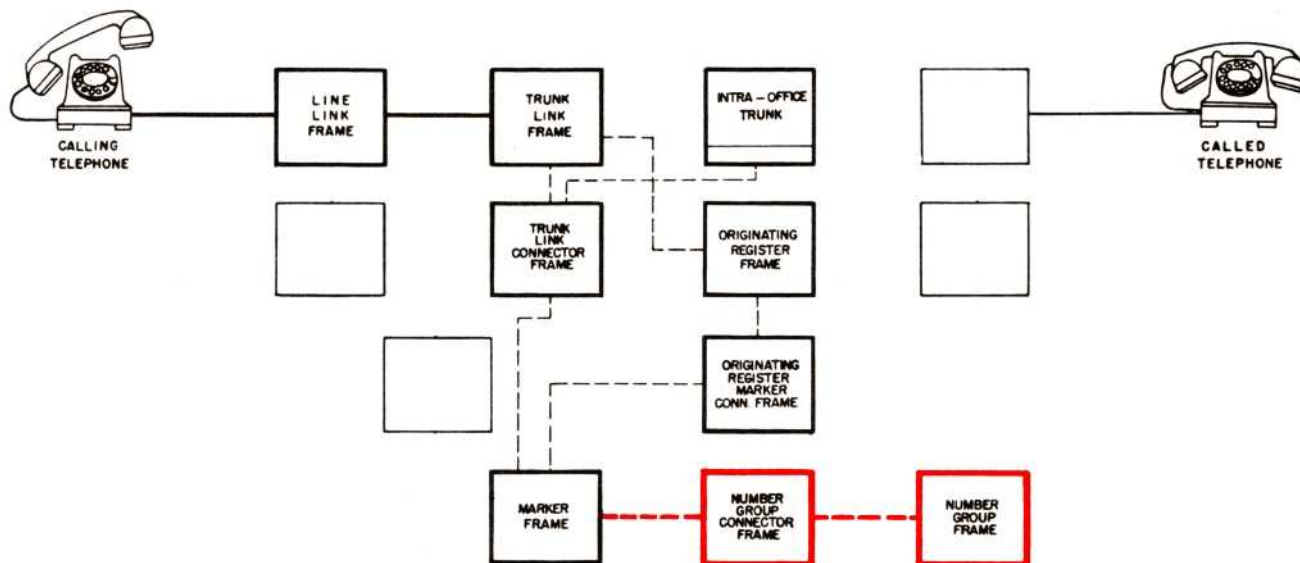
THE MARKER RECOGNIZES THE DIALED OFFICE CODE AS BEING ASSOCIATED WITH THE LOCAL OFFICE TERMINATING EQUIPMENT, AND IT THEREFORE CHECKS ALL TRUNK LINK FRAMES FOR IDLE INTRA-OFFICE TRUNKS. AN IDLE TRUNK LINK FRAME WITH IDLE INTRA-OFFICE TRUNKS WILL BE SELECTED.



SKETCH 9

MARKER SEIZES THE TRUNK  
LINK FRAME AND AN IDLE INTRA-OFFICE TRUNK

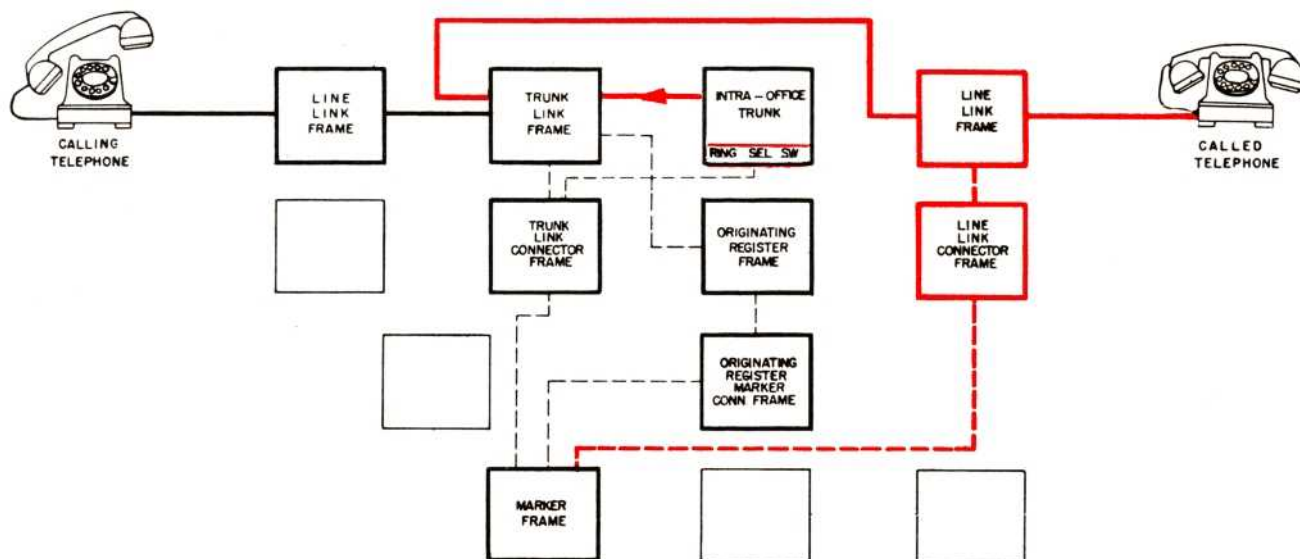
THE MARKER SEIZES THE SELECTED TRUNK LINK FRAME AND CONNECTS TO IT THRU THE TRUNK LINK CONNECTOR FRAME. THE MARKER THEN SELECTS AN IDLE INTRA-OFFICE TRUNK.



SKETCH 10

MARKER SEIZES THE CALLED LINE NUMBER GROUP FRAME

WHILE SELECTION OF AN INTRA-OFFICE TRUNK IS PROCEEDING, THE MARKER, THROUGH THE NUMBER GROUP CONNECTOR FRAME, SEIZES THE NUMBER GROUP FRAME UPON WHICH THE CALLED LINE LOCATION INFORMATION APPEARS. THE NUMBER GROUP FRAME GIVES THE MARKER THE FOLLOWING INFORMATION REGARDING THE CALLED LINE: THE LINE LINK FRAME NUMBER, CALLED LINE LOCATION ON THAT FRAME, AND THE RINGING CURRENT TO BE APPLIED. THE NUMBER GROUP AND NUMBER GROUP CONNECTOR FRAMES ARE RELEASED.

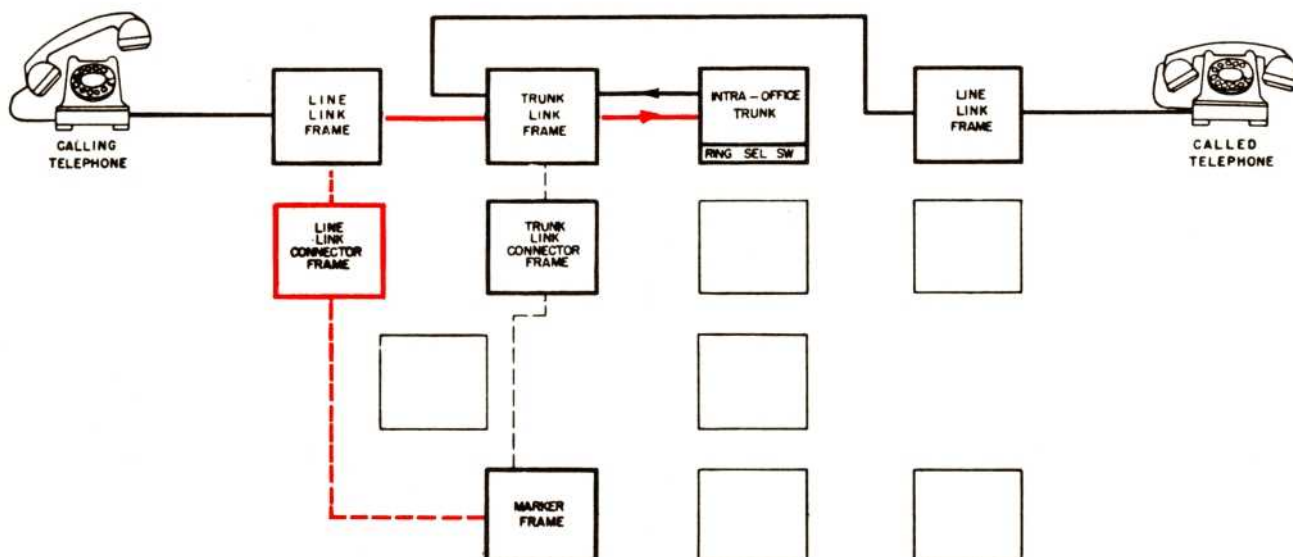


SKETCH 11

MARKER SEIZES THE CALLED LINE LINK FRAME

THE MARKER SEIZES THE LINE LINK FRAME CONTAINING THE CALLED LINE THRU THE LINE LINK CONNECTOR FRAME. THE CALLED LINE IS TESTED FOR A BUSY CONDITION, AND IF FOUND IDLE THE MARKER PROCEEDS TO SELECT AND CLOSE AN IDLE TERMINATING CHANNEL FROM THE INTRA-OFFICE TRUNK TO THE CALLED LINE. SIMULTANEOUSLY, THE MARKER CONNECTS THE INTRA-OFFICE TRUNK TO THE RINGING SELECTION SWITCH. IF THE CALLED LINE WERE BUSY, THE MARKER WOULD RELEASE THE INTRA-OFFICE TRUNK AND SELECT AN IDLE TONE TRUNK, THEN PROCEED THE SAME AS FOR AN IDLE LINE. LET US ASSUME AN IDLE LINE.

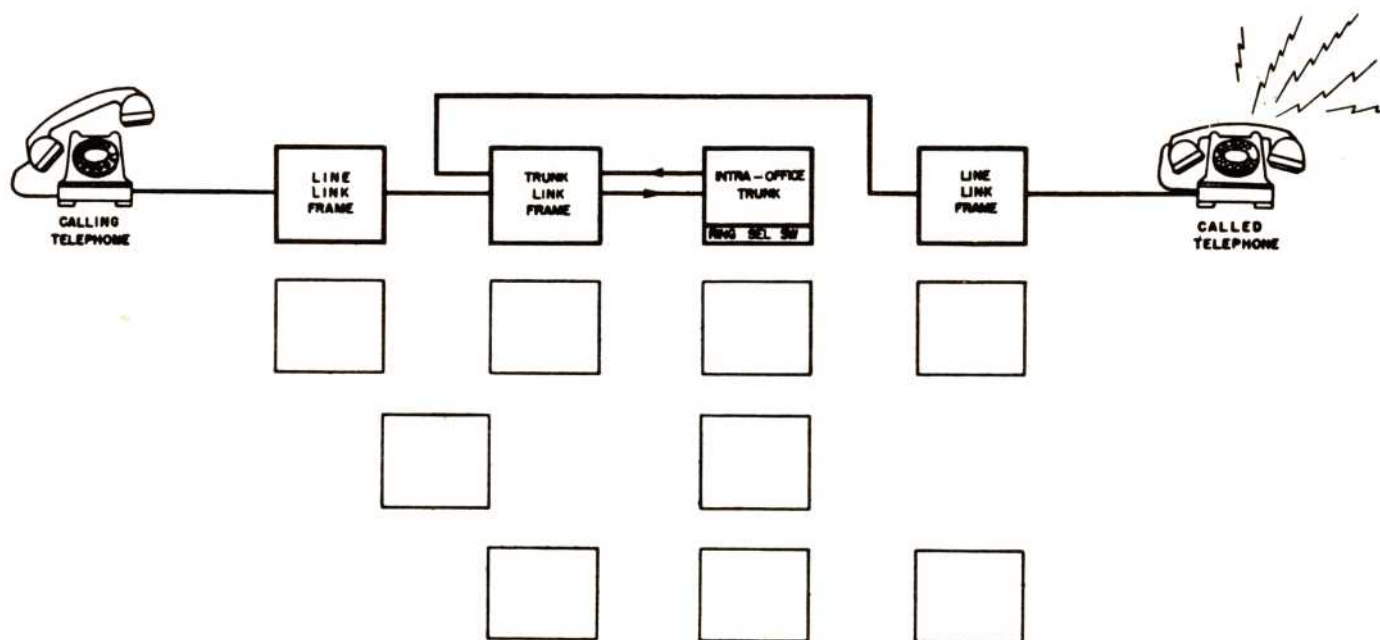




SKETCH 12

MARKER SEIZES THE CALLING LINE LINK FRAME

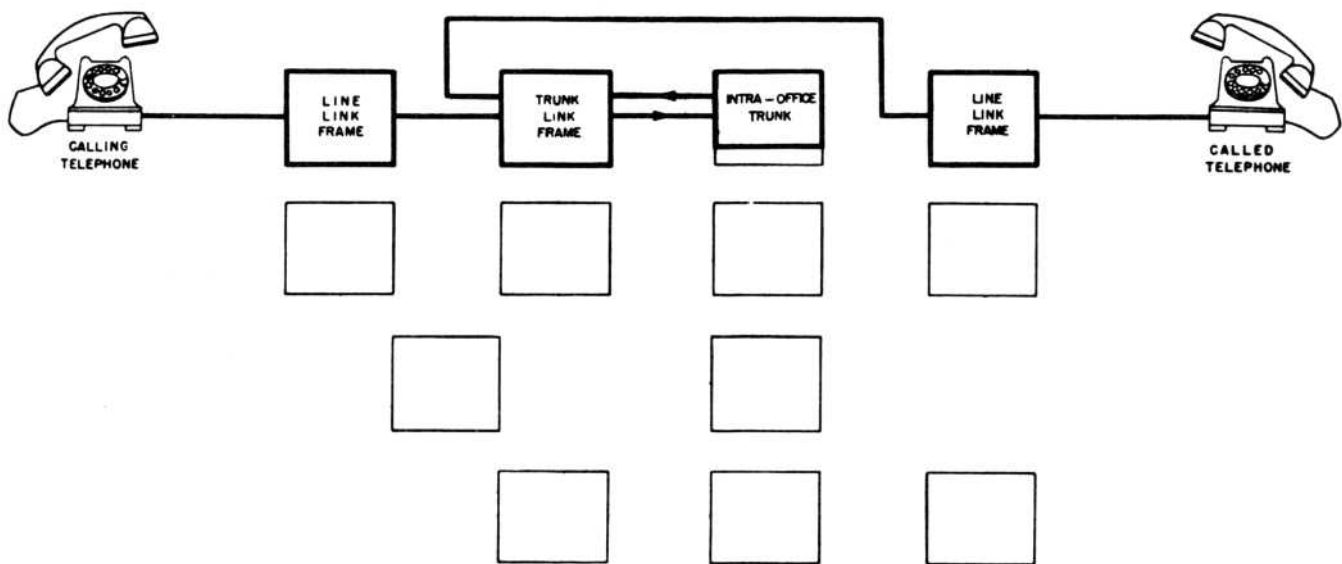
THE MARKER, HAVING ESTABLISHED THE TERMINATING CHANNEL TO THE CALLED PARTY FROM THE INTRA-OFFICE TRUNK, SEIZES THE CALLING LINE LINK FRAME THROUGH THE LINE LINK CONNECTOR FRAME, THEN TESTS AND SELECTS AN ORIGINATING CHANNEL FROM THE CALLING LINE TO THE INTRA-OFFICE TRUNK. THE DIALING CHANNEL AND THE ORIGINATING REGISTER ARE RELEASED, ALLOWING THE MARKER TO CLOSE THROUGH THE ORIGINATING CHANNEL. THE LINE LINK PORTION OF THE DIALING CHANNEL MAY BE REUSED AS PART OF THE ORIGINATING CHANNEL.



SKETCH 13

RINGING IS APPLIED TO THE CALLED LINE

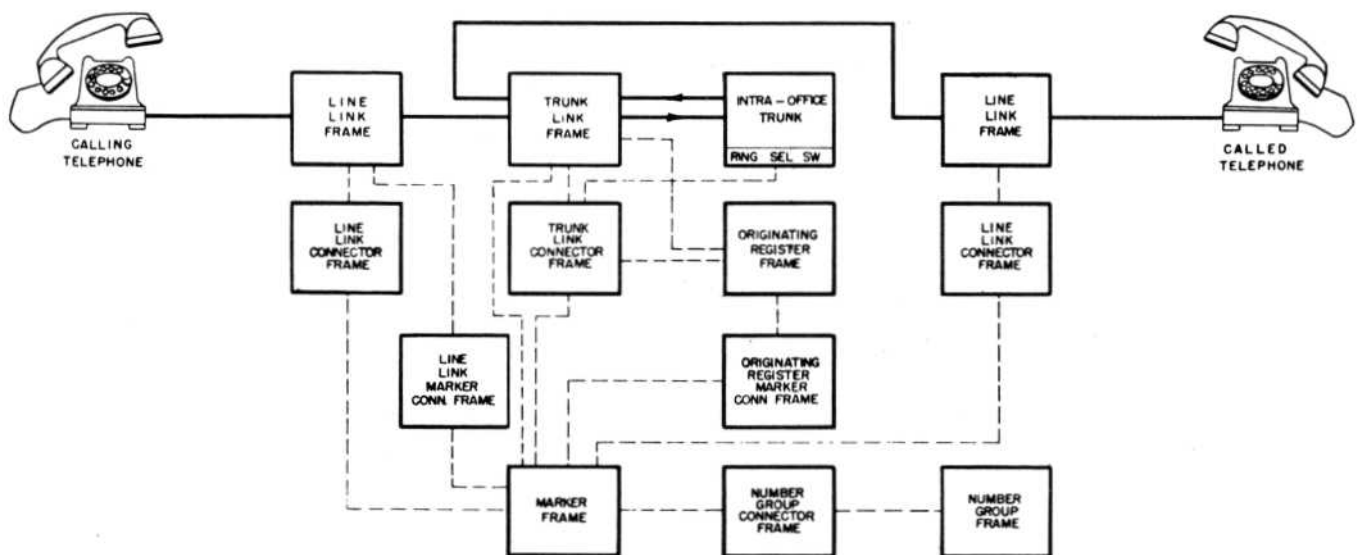
RINGING IS APPLIED TO THE CALLED LINE THROUGH THE INTRA-OFFICE TRUNK, OVER THE TERMINATING CHANNEL FROM THE RINGING SELECTION SWITCH.



SKETCH 14  
CALLLED PARTY ANSWERS

RINGING WILL BE STOPPED BY THE REMOVAL OF THE CALLED SUBSCRIBER HANDSET, AND THE CONNECTION FROM THE INTRA-OFFICE TRUNK TO THE RINGING SELECTION SWITCH WILL BE BROKEN. TALKING BATTERY AND GROUND WILL BE FURNISHED TO THE CALLING AND CALLED PARTIES BY THE INTRA-OFFICE TRUNK.





### SKETCH 15

FRAMES INVOLVED IN COMPLETING

A CALL BETWEEN TWO SUBSCRIBERS IN THE SAME OFFICE

CROSSBAR NO. 5 DIAL SYSTEM