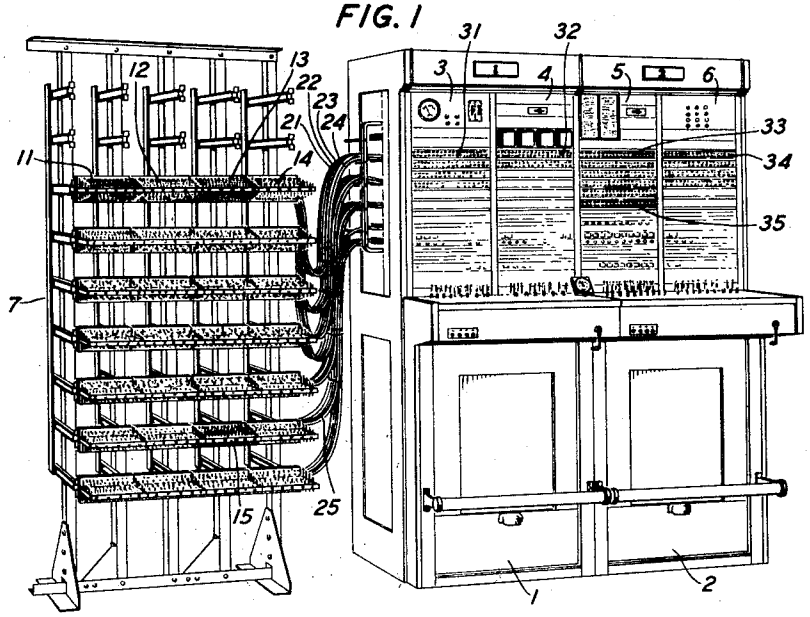
Oct. 10, 1933. A. D. KNOWLTON ET AL 1,930,275

TELEPHONE SWITCHBOARD

Filed May 20, 1932

FIG. 1



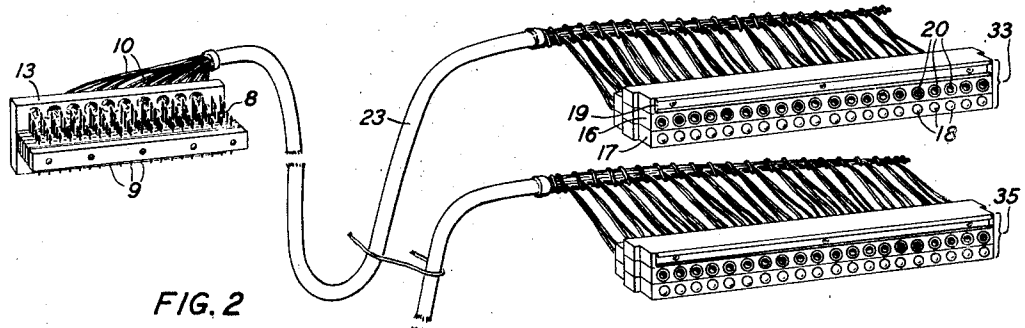


FIG. 2

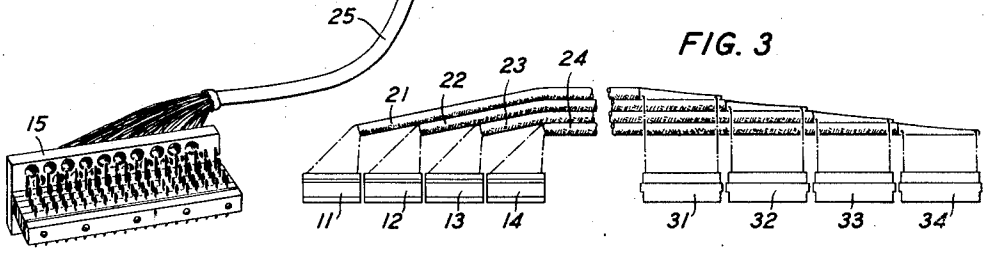
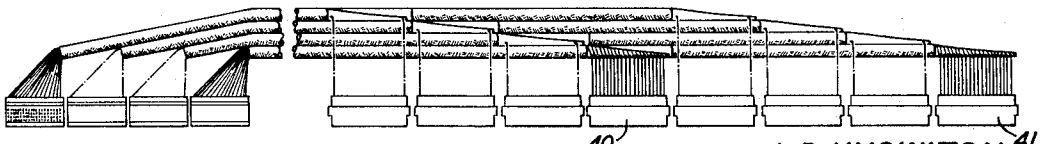


FIG. 3

FIG. 4



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TELEPHONE SWITCHBOARD

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15 Claims. (Cl. 179—91)

This invention relates to switchboards and more particularly to telephone switchboards wherein telephone lines are terminated.

An object of the invention is to make the equipment for groups of telephone lines terminating at a switchboard interchangeable.

Another object is to adjust the switchboard position of any line or lines as required.

A feature of the present invention whereby the above mentioned objects are attained resides in a combination of unnumbered jack terminals, separate designation strips, a uniform length of switchboard cabling and terminal strips arranged in order to correspond to the positions of said jack terminals as hereinafter set forth.

The invention will be understood from the following description and the figures of the accompanying drawing in which the features of the invention are illustrated:

Fig. 1 of the drawing shows a central office switchboard, its accompanying distributing frame, and the arrangement of the switchboard cables connecting the switchboard to the distributing frame;

Fig. 2 shows the equipment for two groups of common battery lines appearing in the same panel of the switchboard;

Fig. 3 shows the arrangement of the cabling for groups of single appearance lines terminating in four adjacent panels of the switchboard; and

Fig. 4 shows the arrangement of the cabling for groups of double appearance lines multiplied on a four panel basis.

Referring to the drawing, the switchboard shown in Fig. 1 consists of two sections or operators' positions 1 and 2. In each section are two panels 3 and 4 and 5 and 6, respectively, wherein subscribers' magneto and common battery telephone lines have appearances. At one end of the switchboard is the distributing frame 7 to which are attached a plurality of terminal strips or blocks as, for example, the strips 11, 12, 13 and 14.

Telephone line conductors (not shown) entering the central office are connected to the upper terminals on the terminal strips, as for example, the terminals 8 in Fig. 2. Common battery lines are terminated on the upper six rows of strips and magneto lines on the lower row in the present instance. Upon each strip a plurality of lines may be terminated, a group of 20 lines or 40 conductors, ordinarily being connected to each terminal strip.

To the terminals on the under sides of said strips, for example, the terminals 9 of Fig. 2, each of which is conductively connected to the upper terminal immediately above it, are connected the conductors of the switchboard cables, for example, the conductors 10 of the cable 23. The cable conductors terminate at the other end in the switchboard face equipment, the conductors of cable 23, for example, are connected to the tip and ring connections of the jacks 20 which are mounted in jack strip 16. Associated with the jack strip 16 is a lamp strip 17 containing lamp sockets holding the lamps 18. A lamp is located directly below each jack, the circuit wiring connecting them. In magneto lines drops are associated with the line jacks in place of lamps. Directly above each jack strip is a designation strip holder 19 in which a cardboard designation strip may be inserted bearing the line numbers.

The terminal strips are located in the same relative position on the distributing frame as the associated equipment is located in the switchboard, terminal strip 13, for example, being located on the distributing frame in the third column and top row of terminal strips, while its associated switchboard equipment 33 is located at the top of the third panel in the switchboard.

The cables connecting the terminal strips with the switchboard equipment are of equal length for all groups of lines appearing in the same switchboard panel. For example, cable 23 connecting terminal strip 13 with the switchboard equipment 33 located in panel 5 is equal in length to cable 25 connecting the terminal strip 15 with the switchboard equipment 35 also located in panel 5, as indicated in Fig. 1 and more clearly shown in Fig. 2.

The equipment for each twenty line group of common battery lines terminating in any panel, comprising a terminal strip connected by a cable with the jack and lamp strips, is identical to the equipment for any other group of common battery lines terminating in the same panel and they are, therefore, interchangeable. The designation strip holders are not permanently connected to their associated jack strips and therefore may be inserted wherever required. Furthermore, the cardboard designation strip may be changed and renumbered whenever necessary. This arrangement permits any jack to be assigned to any subscriber's number. This allows the line to be distributed in front of the operators in the most efficient operating arrangement suitable to any particular size of switchboard without changing the subscriber's numbers.

Fig. 3 shows the relation of the cabling between terminal strips 11, 12, 13 and 14 and switchboard

appearances 31, 32, 33 and 34 appearing at the tops of the panels 3, 4, 5 and 6, respectively. It will be noted that the cables 21, 22, 23 and 24 are of progressively greater length.

From the above description, it will be seen that only four types of line terminal equipment units are needed, one type only being required for each panel.

Fig. 4 shows the cabling arrangement for an eight panel switchboard wherein the lines are multiplied on a four panel basis. The lines appearing at 40, for example, also appear at 41, four panels to the right. In this case also only four types of line equipment are required, each type providing for two appearances. In this case, line lamps will ordinarily be inserted at only one of the two line appearances although sockets are provided at each appearance. These lamps may, therefore, be changed to suit traffic conditions.

While the accompanying specification and drawing set forth the invention in certain specified embodiments, we do not wish to be limited to these alone, but intend to cover the invention broadly within the spirit and scope of the appended claims.

What is claimed is:

1. In a telephone exchange, a switchboard, a plurality of panels thereon, a distributing frame, cables of telephone line conductors between said frame and said panels, all of said cables terminating in any panel being of equal length.

2. In combination, a telephone switchboard comprising panels containing telephone line jacks mounted in strips, a separate designation strip associated with each of said jack strips, a distributing frame at one end of said switchboard, terminal strips on said frame, and cables connecting the terminal strips on said frame with said jack strips all of the cables terminating in any panel being of equal length.

3. In a telephone exchange, a switchboard, a plurality of panels thereon, strips of telephone jacks on each panel, a distributing frame, terminal strips on said frame, a cable of telephone conductors connecting each said jack strip with one of said terminal strips, all of said cables terminating in any panel being of equal length.

4. In a telephone exchange, a switchboard, a panel thereon, a distributing frame, means for terminating a first group of telephone lines on said panel comprising a terminal strip on said distributing frame, a jack strip on said panel, and a cable connecting said pair of strips, like means for terminating a second group of telephone lines on said panel, said first and second means being interchangeable.

5. In a telephone exchange, a switchboard, a panel thereon, a distributing frame, means for terminating a first group of telephone lines on said panel comprising a terminal strip on said distributing frame, a jack strip on said panel, and a cable connecting said pair of strips, and identically proportioned means for terminating a second group of telephone lines on said panel.

6. In a telephone exchange, a multiple switchboard, strips of telephone line jacks thereon, a distributing frame, terminal strips on said frame, a single cable connecting each terminal strip with the jack strips at the multiple line appearances, said combinations of terminal strips, cables, and jack strips being interchangeable.

7. In a telephone exchange, a switchboard, multiple panels thereon, a distributing frame, means for terminating a first group of telephone lines on said multiple panels comprising a terminal strip on said distributing frame, a jack strip on each of said multiple panels, and a cable connecting said terminal strip with said plurality of jack strips, like means for terminating a second group of telephone lines on said multiple panels, said first and second means being interchangeable.

8. In combination, a switchboard panel containing strips of unnumbered jacks, a designation strip associated with each of said jack strips, a distributing frame, terminal strips arranged in vertical order on said frame, and cables of equal lengths connecting said jack strips with said terminal strips, each jack strip being connected with the terminal strip having the same relative vertical position.

9. In combination, a switchboard panel containing jack strips, a distributing frame, terminal strips arranged in vertical order on said frame, and cables of equal length connecting said jack strips with said terminal strips, each jack strip being connected with a terminal strip having the same relative vertical position.

10. In a telephone exchange, a switchboard, a plurality of panels thereon, jack strips mounted in said panels, a distributing frame at one end of said switchboard, terminal strips on said frame, a length of switchboard cable connecting each said jack strip with one of said terminal strips, said combinations comprising jack strip, cable and terminal strip associated with any panel being interchangeable.

11. In a telephone exchange, a switchboard, a plurality of panels thereon, jack strips mounted in said panels, a distributing frame, terminal strips on said frame, a length of switchboard cable connecting each said jack strip with one of said terminal strips, said combinations comprising jack strip, cable and terminal strip associated with any panel being interchangeable.

12. In a telephone exchange, a switchboard, a plurality of panels thereon, jack strips mounted in said panels, a distributing frame, terminal strips on said frame, a length of switchboard cable connecting each of said jack strips with one of said terminal strips, a plurality of said combinations of jack strip, cable and terminal strip terminating in any panel being identical in dimensions.

13. In a telephone exchange, a multiple switchboard, a plurality of panels thereon, jack strips mounted on said panels, a distributing frame at one end of said switchboard, terminal strips on said frame, a single cable connecting each said terminal strips with jack strips at the multiple line appearances, said combinations of terminal strip, cable and jack strips being interchangeable.

14. In a telephone exchange, a switchboard, a panel thereon, jack strips in said panel, a distributing frame at one end of said switchboard, terminal strips thereon, a length of cable connecting each said jack strip with a terminal strip individual thereto, said assemblages of jack strips, cable and terminal strips being interchangeable.

15. In a telephone exchange, a switchboard, a plurality of panels in the face thereof, jack strips in said panels, a distributing frame at one end of said switchboard, a terminal strip on said frame individual to each jack strip, conductors connecting each pair of strips, each terminal strip occupying the same relative vertical and horizontal position in the distributing frame as its associated jack strips occupy in the switchboard.

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