A New Dial PBX for Residences

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Local Systems Development

TO meet the need for more extensive telephone equipment for residences, a new dial PBX—known as the 750-A—has been developed. Although designed primarily for residence use, it is expected that the new PBX will find application with small business concerns as well.

Two sizes are available; the larger with a capacity of fifteen station lines and three central office trunks, and the smaller with eight lines and two trunks. The switching equipment is arranged to give three paths for intercommunicating connections for the larger size and two for the smaller.

Fig. 1—Three trunk buttons, a hold, and a local button are mounted in the applique base of the hand-set used with the 750-A PBX

Studies indicated that the equipment should be arranged to allow answering central-office calls at various locations. As many of the stations as desired may be equipped, therefore, with a five-button key which permits any station so equipped to place or answer either central office or local calls, and to transfer central office calls to other stations. Every effort was made to reduce the number of wires connecting the stations to the switching equipment and as a result only six are required at the most. Other advantageous features are a low operating voltage, permitting the battery to be charged over cable conductors from the central office if desired, and a small compact switching cabinet of pleasing appearance.

Handsets will be used ordinarily but either deskstands or wall sets may be substituted where desired. A new applique base, mounting the five-button key, was designed for the handset as shown in Figure 1. For wall set and deskstand stations, a key as shown in Figure 2, is furnished. The handset is available in the standard black finish, and in addition in any of the five recently standardized colors.

All stations are provided with a subscribers set, the ringer of which is used to indicate an incoming intercommunicating call. To indicate incoming central-office calls, either differently toned bells for each trunk may be used, or a bell common to all trunks with lamp indicators to designate the calling trunk. A new mounting, shown in Figure 3, has been developed for the three lamps.

An intercommunicating call may be

Fig. 2—A separate key is arranged for use with desk stands or wall sets

made from any station by operating the "L" button, lifting the handset, and dialing the desired station. Lifting the handset causes one of the three interconnection paths, or links as they are commonly called, to attach itself to the line. The calling station then hears dial tone, and dials one or two digits as required. A rotary selector of the 206 type follows the pulses, and at the completion of dialing, relays operate to establish the connection. The bell at the called station is rung with interrupted ringing current, and talking battery for both stations is supplied by the link circuit. The called station answers by pressing the "L" button and lifting the handset. When the line called is busy no connection is made, and the usual busy tone is returned to the calling station. With this arrangement secrecy is provided as in a dial central office.

An outgoing trunk call is made from any key station by depressing one of the three trunk keys instead of the "L" key. If the trunk is in use, a busy tone will be heard and another trunk will have to be selected. Relays, controlled by the trunk buttons, prevent all other stations from connecting to the trunk in use. If the central office is manual, the operator will be signalled; if it is a dial office, the desired number will be dialed in the usual manner.

An incoming call from a central office may be answered at any of the key stations unless they are specially restricted. The button corresponding to the trunk carrying the incoming call is depressed, and the handset lifted. The first station to answer locks out all other stations from connection to the trunk; any station attempting to make connection to a trunk in use will receive a busy tone. If the incoming call is for some station other than the one answering, the button "H" is depressed to hold the trunk, and the station wanted is dialed in the usual manner after depressing button "L". The "H" button is non-locking and does not cause the trunk button to release. Depression of the "L" button, however, releases the trunk button so that the

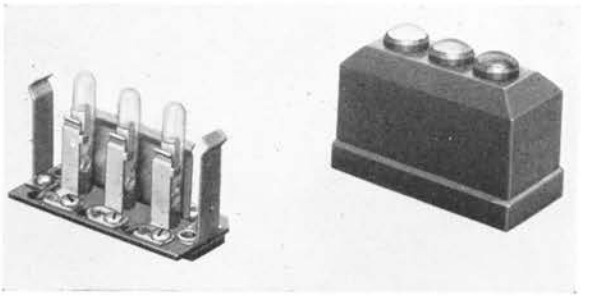


Fig. 3—A mounting for the three trunk lamps has indicating caps and may be placed where convenient

station called may make connection to the trunk carrying the call.

In connection with a residence there may be certain telephones, such as those in the garage or other separate buildings, to which it is not desirable to run six wires. For such stations an optional arrangement is available, requiring that only two wires be run, and that the five-button key be omitted. Such "keyless" stations may then either make or receive local calls but have no keys for originating or answering trunk calls. Provision has been made, however, so that by the addition of a small key cabinet, located, for example, in the butler's quarters, connection may be established between any of the keyless stations and the central office.

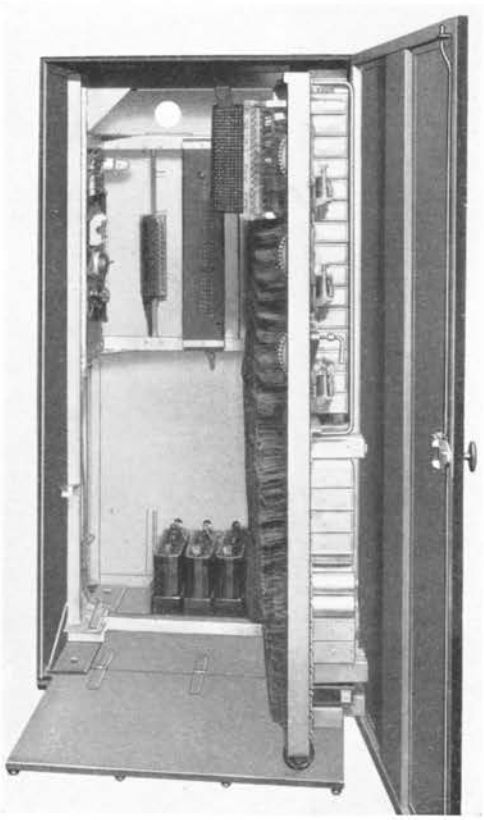


Fig. 4—Complete accessibility to the wiring and apparatus was obtained by mounting the switching equipment on a swinging gate

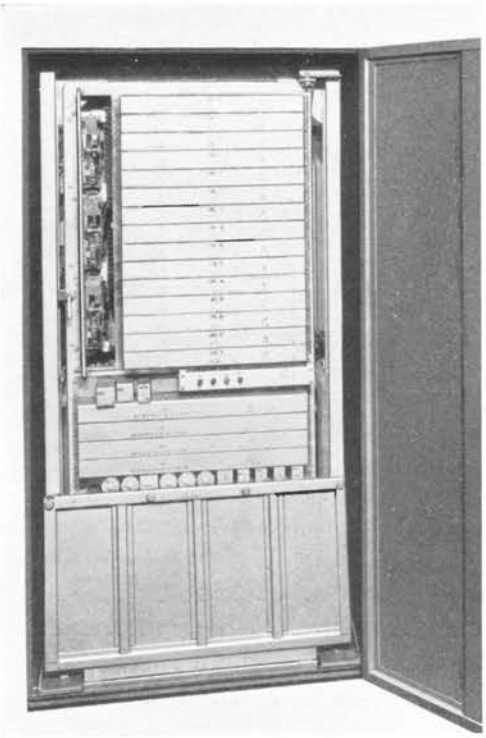


Fig. 5—When the gate is closed, the platform on which it rolls folds up against it

Provision is made for restricting any of the key stations from placing central-office calls. Such restricted stations, however, may answer incoming calls, or transfer them, in the usual manner.

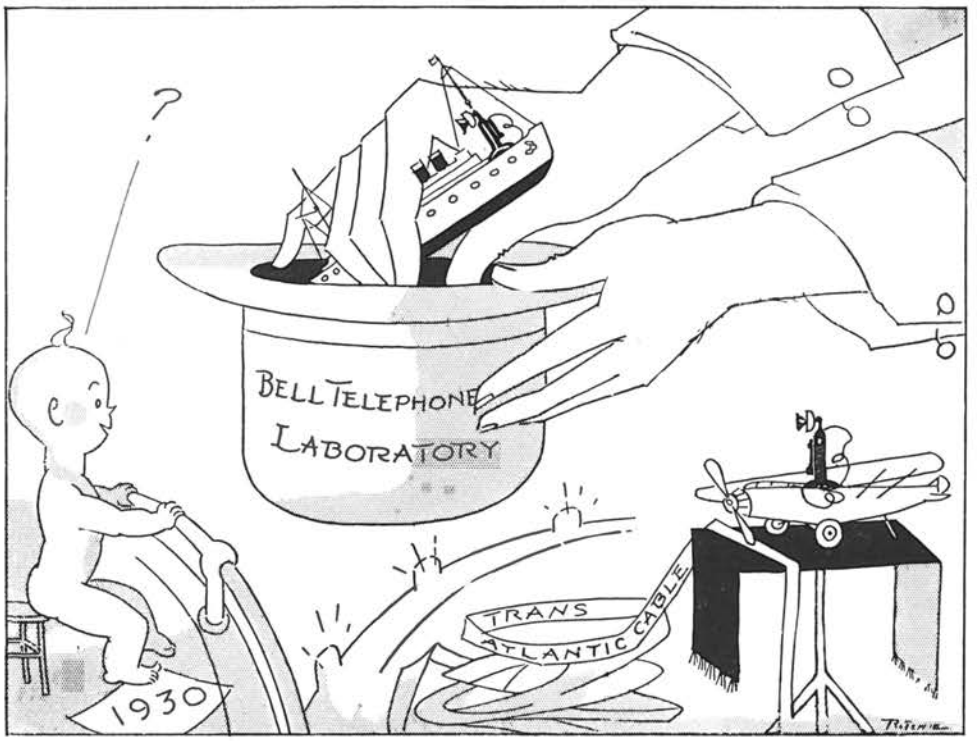
All the switching apparatus, together with the power equipment consisting of an eight-cell storage battery, is mounted in a sheet metal cabinet five feet high and about two and a half wide by two feet deep. The switching apparatus is mounted on a gate which may be swung out when the door is opened to make the wiring side of the apparatus accessible.

The appearance of the cabinet is shown in Figure 4. The gate, when

opened, is supported by a rubber-tired wheel, rolling on a metal platform, which prevents possible marking of the floor and also gives a level surface. The platform is folded up when the gate is closed as shown in Figure 5.

No power-driven machine is required at the new PBX to provide ringing current and the various tones. When a tone is needed, a relay is made to buzz through its contact, and by transformer action to a secondary winding on the relay core, the tone signal is produced. For the busy signal this tone is interrupted by slow acting relays. Continuous ringing current is obtained from the central office and is interrupted locally by slow-acting relays.

This system requires a comparatively small amount of apparatus and yet gives a maximum of telephone service. Every effort has been made to reduce the size of the switching cabinet, and particularly to design the station apparatus to harmonize with the requirements of residential service. The provision of handsets in several colors is a step in this direction. The new PBX is the smallest dial system yet produced, and it is an important contribution of the Bell System.



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