

# A New Non-Multiple P.B.X.

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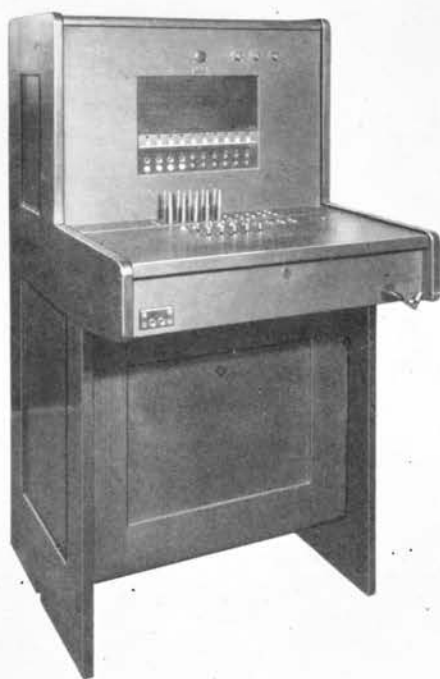
WHEN the need for private branch exchange service first originated most of the Telephone Companies designed their own equipment and, as a result, a large number of different types were manufactured with an inevitably large manufacturing cost for each. However, in 1904 a non-multiple switchboard designed to meet the common needs of all the Associated Telephone Companies was developed and manufactured. This switchboard was known as the No. 4 P.B.X. Since that time many changes in the design of both the framework and circuits have been made in order to keep this part of telephone equipment abreast of the other branches as the art of communication progressed.

The demand for private branch exchange service grew rapidly and in 1916 the 550 type non-multiple P. B.X. was designed, with a framework improved both in appearance and construction, to replace the No. 4. The 550-A and 550-B boards were developed in rapid succession. This type was made in three different sizes: one with a capacity for thirty station lines, another for eighty lines, and a third for 320 lines. In 1920 the design was modified to add dialing equipment so that the boards might work into dial central offices and the board was then called the 550-C.

The 551 type P.B.X. switchboard, which replaces the 550-C, is a product of 1927. In the early part of that

year the basic ideas for the new design began to crystallize. The design was completed, the manufacturing plans laid, and the production tools made up before November, when production of the new boards began. Before the end of the year the first lot was shipped and placed in service.

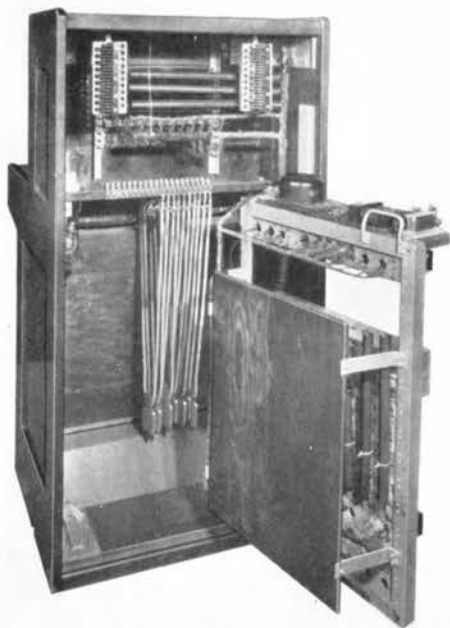
The 551 type P.B.X. was designed



*Fig. 1—Front view of 551-A P.B.X.  
without transmitter*

to improve maintenance conditions as well as to reduce the cost of manufacture. The same operating features are employed in the new board as

were used in the 550-C. However, in place of the three different 550-C framework sizes, that is the thirty, eighty, and 320 line boards, the 551 type P.B.X. is made in only two sizes but arranged for three capacities: the smaller size with a capacity for forty station lines, known as the 551-A; and the larger, with a capa-



*Fig. 2—Rear view of 551-A with relay gate open showing the cord-weight protection panel in place*

city for 320 lines, known as the 551-B. The large board may be equipped for a maximum of either eighty or 320 lines. The capacity of the thirty line board was increased to forty lines in order to increase the demand for the 551-A board by absorbing a part of the demand for the discontinued eighty line size.

In the new board strip-mounted jacks and lamps are used for the station lines. All apparatus inside the

section, except the hand generator and ringing resistance lamp, is mounted upon a relay gate which makes the equipment immediately available for adjustment while the gate is closed and leaves the wiring fully exposed when the gate is open. The cord-weight protection panel is mounted on the relay gate rather than being fixed in the section so that when the gate is open and work is being done on the cords or hand generator the gate wiring is still protected from damage.

As the new type of P.B.X. was developed, features were incorporated in it so that it could be manufactured on a progressive assembly basis in line with the general tendency for mass production. An assembly plan has been worked out in conjunction with the engineers of the Western Electric Company so that the interval of manufacture for the 551 is ap-



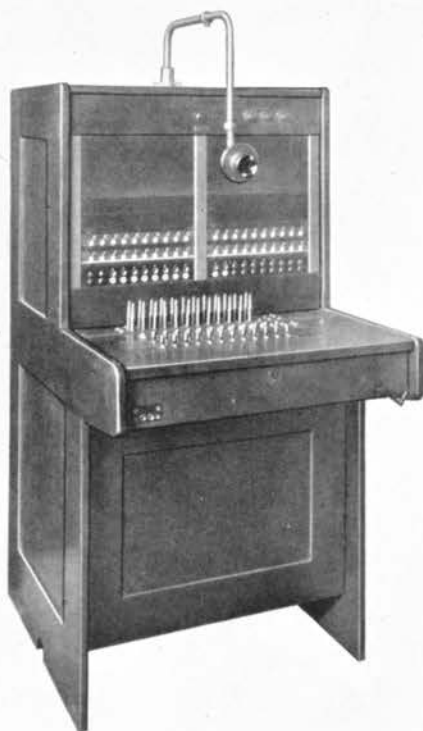
*Fig. 3—Rear view of 551-A with gate closed showing relays mounted on outer side*

preciably less than that of its predecessor. In place of carrying on the different phases of manufacture in various departments throughout the manufacturing plant, the new boards are completely assembled, wired, tested, inspected, and even crated in one department. All of these operations are concentrated in one shop and are so timed that one follows on the heels of another, in proper order in the progressive assembly line.

The framework for the new switchboard is made up of a minimum number of parts. Essentially it is formed of a floor, a roof, and two end panels of wood assembled together by means of large bent angles of sheet steel screwed in the four corners. To this are added the keyshelf, front panels, and rear door to complete the housing for the equipment. The rear equipment in both the 551-A and the 551-B is mounted upon the welded angle-iron gate. This gate is so placed in the framework that it not only serves to mount the equipment in a position easy for maintenance but, when locked in a closed position, reinforces the framework.

One of the chief objects of the new design was to eliminate as far as possible the repair work on the woodwork required after the boards are placed in service. After studying conditions at various branch houses it was found that the keyshelf and face of a P.B.X. were the first to become worn and that repairs on these parts made up the larger part of all framework repairs. To avoid this and to

give the new boards a longer field life, both the keyshelves and the fronts of the 551 P.B.X.'s have been faced with phenol fibre rubbed a dull



*Fig. 4—Front view of 551-B P.B.X. equipped with standard transmitter*

black which not only results in a pleasing rich appearance but provides a very hard and durable surface.

As is so often the case, the development of this new P.B.X. has resulted in a board easier and cheaper to manufacture as well as one that is more pleasing in appearance and that is easier to maintain in the field than the board it replaces.

