291,511

PATENT SPECIFICATION

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PROVISIONAL SPECIFICATION

Improvements relating to Loaded Telephone Circuits and particularly to the reduction of Cross-talk therein

Cross talk in loaded phantom circuit systems is minimalised by the following constructions and arrangements of the loading coils: —

(1) The terminal wires on one side of a phantom coil, Fig.1, are connected to the inner ends of the inner windings and those on the other side to the outer ends of the outer windings. The capacities K*c*; K*p* to core and pot respectively are thus concentrated at the terminals and any unbalance can be corrected by condensers, which may consist of shielded pairs of wires, connected at these points. (2) The terminal wires and the inter-coil wires are led round the outside of the coil in such a way that their capacities to the outer windings are balanced. Thus, with the arrangement shown, since the capacities *a* . . *d* of the terminal wires and those *e* . . *f* of the connecting wires are all equal a condition of balance is obtained as indicated in Fig. 4. Alternatively, the wires A4, B4 may be led out on the right (eliminating the capacities *a*, *b*), and the wires C1, D1 may be led round only as far as the top and bottom of the coil and then doubled back on themselves so as to leave it on the left (doubling the capacities *c*, *d*). In this case also balance is obtained as indicated in Fig. 5.

(3) The side coils are constructed, as shown in Fig. 2, with the capacities to core concentrated on one side and those to pot on the other, and are associated with the phantom coil to form a unit in such a way that the lines in one direction are connected to the inner ends of inner windings and the lines in the other direction to the outer ends of outer windings.

(4) The phantom and side coils are mounted coaxially, and the magnetic coupling between them is adjusted to minimise cross talk by relative rotation of the coils, as described in Specification 226,493. This is done most satisfactorily if the leakage flux has the same form in all the coils. Accordingly one pair of diametrically opposite washers in the phantom coil is larger than the other to provide two main points of leakage, as in the side coils, instead of four.

(5) If the loading unit, as constructed, is already balanced, it is connected between two cable sections which have themselves been balanced as described in Specification 2508/13. If not the unbalances in the unit are opposed by those in the cable. This may be done (*a*) by connecting one side of the unit to a cable section (leaving the other side disconnected), and balancing the section plus loading unit against the next section, or (*b*) by measuring the unbalance in the loading unit and connecting to it a cable section in which unbalances are equal and opposite.

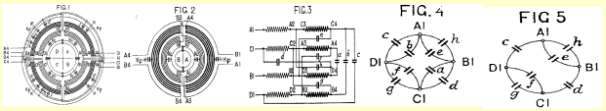

Figure 1 Figure 2 Figure 3 Figure 4 Figure 5