

THE PROBLEM OF SECRET TELEPHONY

By Edward P. Thompson.

If first-class or sealed mail matter were abolished, and if people were obliged to correspond by open letters or postal cards only, all mail matter thus being open to inspection by those through whose hands it passed, it seems evident that both business and social intercourse by correspondence would be seriously crippled. The postal revenue would be reduced also. The public would object to the fact that all their correspondence could be read by post-office employees.

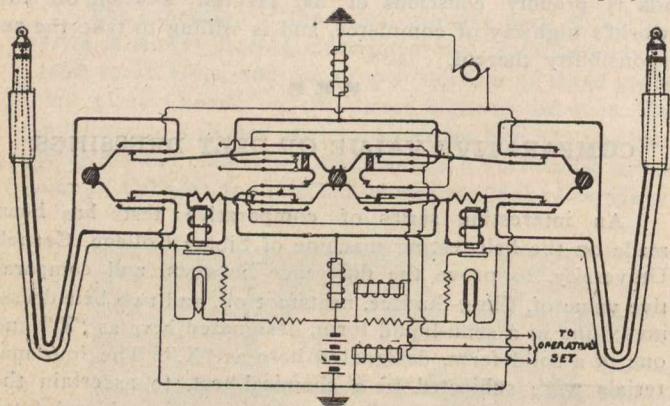


FIG. 1.—DIAGRAM OF CORD CIRCUITS.

As a somewhat parallel case, telephone engineers have always known, but subscribers are only becoming aware, that present telephonic communications are no more private than postal card messages. The objectionable abuses of the operator's power to "listen in," being known, telephone business men, engineers and inventors have taken steps to remedy the deficiency.

Telephone users, in general, experience inconvenience and annoyance resulting from operators listening in. In some instances communication is seriously impaired. For example, the private branch exchange operator in a business office can become familiar, by listening in, with the most confidential affairs of the firm. Again, much of the private life of those in modern apartments is an open book to the girl who sits at the foot of the stairs.

The National Inter-State Telephone Association, at the June convention, agreed that "On modern systems, no listening whatever is necessary," and formulated a rule against listening. This quotation is from their Standard Operating Rules.

Mr. W. Napier, at a recent meeting of the British Institution of Electrical Engineers, in commenting upon similar views of Mr. Herbert Laws Webb in a paper read before the society, approved the latter's remarks by observing that the necessity of listening in on the part of the operator is obviated. To make rules and to show that listening in is not necessary, proves that such listening is objectionable (perhaps as much so as are open letters by mail), but do not prove that the evil is thereby remedied.

Richard M. Beard, chief engineer and vice-president of the International District Telephone Company, of New York, is becoming well known through his success in demonstrating that through the adoption of a few simple expedients, listening in by the operators may be absolutely prevented without detrimental effects in the handling of the traffic. That he has completely solved the problem is established by the sixty-seven claims allowed or granted to him by the Patent Office. One of the broader claims reads as follows: "Listening keys, an operator's circuit normally connected to said keys, and means automatically preventing more than one said listening key being connected to said circuit in listening phase at a time."

Telephone men especially, may be interested in an exposition of the practical construction for carrying out this generic conception, which could be practised in various ways, all of which, however, if done by others, would constitute infringement. The particular manner in which Mr. Beard has constructed plants when applied either to a cord or cordless switchboard, comprises the old elements of an exchange together with the usual listening keys, each having

a pair of contacts normally open to the respective subscriber's lines, and an operator's circuit to which said contacts are multiplied, the listening keys having spring contacts preventing said open contacts of any key from being connected to more than one of said subscriber's lines at a time. All the installations in the world, therefore, could be transformed into secret systems, simply by incorporating a few extra contacts in the right places in the listening keys.

The cord circuit in the accompanying diagram, Fig. 1, shows the usual arrangement of lamp supervisory signals and a well-known method of connecting to common battery. It is not claimed that this is the only arrangement or even the best, but one of the many ways of applying this circuit in common battery exchanges. By tracing the circuits, it will be clearly seen that it is impossible for an operator to listen in while two subscribers are in conversation.

Fig. 2 shows a two-way listening and a two-way ringing key mounted on the same escutcheon plate. From this it will be seen that the keys look about like those usually employed in switchboards. The invention, therefore, is not one of complicated apparatus, but a simple arrangement of circuits. It is interesting, furthermore, to note that the estimated extra manufacturing cost of equipping a new one hundred line board is less than ten dollars.

Regarding the former state of the art, perhaps no other invention approaches the solution of the problem so closely as does the old and abandoned common call wire system, in which the operator connects any two subscribers' lines by a pair of cords having no connection with her telephone. The

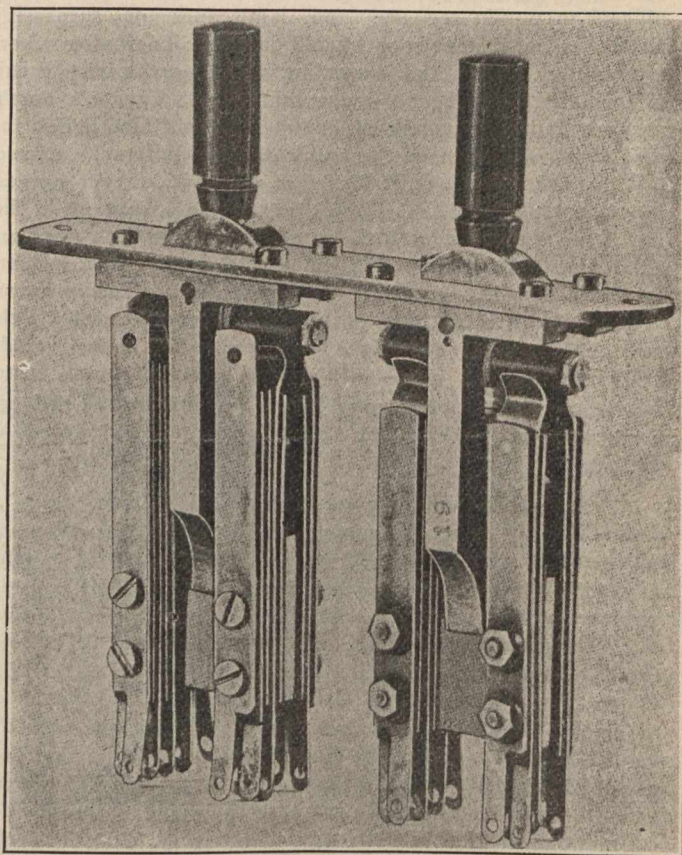


Fig. 2.—Two-way Listening and Two-way Ringing Key.

system became obsolete on account of the dire confusion produced by any number of subscribers trying simultaneously to address the operator who listens continuously on the common call wire. It lacked complete secrecy, as the orders of any calling subscriber could be heard by any one or all of the other subscribers. It has no bearing upon modern telephone traffic, because it is a thing of the past. It is dead, except in places like Glasgow, in the municipal plant, and there is moribund.

As in the art of watchmen's clocks (which until recently have defied the cunning of the night watchman in vain), so