from: A History of Engineering & Science in the Bell System
THE EARLY YEARS (1875-1925)

Chapter 3 Station Apparatus

VII. CUSTOMER TELEPHONE ADJUNCTS

7.3 Metering Arrangements

Around the turn of the century there was much discussion of the most equitable way to charge customers for telephone service. It was generally agreed that long-distance calls should be billed individually according to distance and duration, but local service was ordinarily covered by a subscription fee that was independent of the number of calls made.[85] Many people felt that this was inequitable. Some customers who seldom used the phone objected to paying as much as heavy users did, and many telephone managers felt that as a result of flat-rate service, customers made their phones available to friends and neighbors who would otherwise become subscribers. There was, therefore, a considerable body of opinion in favor of charging, even for local calls, on the basis of the number of calls originated. There was general agreement that charges for incoming calls would be unfair since the recipient had no control over them. Two schemes for measuring service were introduced, both depending on apparatus added to the regular customer's telephone. One called for the use of meters (message registers) to count the calls, and the other used the coin box.

The original idea was to place the meter on the customer's premises. Some of these devices required the user to press a button or operate a lever to initiate and register a call. They were fundamentally the same as coin boxes, registering a call on a counter instead of collecting a coin. They had the same disadvantages of requiring extra operator time and a visit to the premises to read the meter but the customer was billed monthly and spared the annoyance of having a supply of coins on hand. Hammond Hayes and others came up with counters operated electrically which were partly automatic but either required complicated mechanisms or operator time to handle free and incomplete calls. This and the need for meter reading made the use of the meter on the customer's premises unsatisfactory and the scheme was little used.

A more satisfactory arrangement was devised by Scribner which used meters on a one-per-customer basis at the central office. This scheme required little extra operator time (it ultimately became completely automatic) and greatly reduced the cost of meter reading. It was the only meter scheme used extensively in the Bell System and has been used mostly in large cities. In such locations measured service is still employed but in small cities flat-rate service has always been preponderant.

The Chicago Telephone Company was the greatest user of Coin boxes for providing measured service in the home, but they were also employed in a few other cities, of which Cincinnati was one. At first the idea was outlawed by the Chicago City Council but in 1900 the City Legal Counsel ruled that coin boxes in residences were permitted under the company charter.

Originally the idea was that they would be used more or less as semipublic stations, but the pay-as-you-call idea gained favor and by 1902 they were used widely in residences, 20,000 having been installed during the previous year. This one year's growth was just short of the total stations (25,000) in service during the previous year and explains why the Chicago Company developed great enthusiasm for this type of measured service.

The explosive growth did not last, but the use of residential coin boxes (at user's option) continued in Chicago into the fifties, various kinds of coin boxes being used during this period. Ultimately the collection cost became excessive and the pay-as-you-call system gave way to the monthly billing system in use elsewhere.[86]

Thus the idea of charging on the basis of originated calls started with the use of a station adjunct, but such arrangements were not used extensively. The basic idea was survived but metering has become one of the functions performed at the central office under control of the switching mechanism.

[85] This is known as flat-rate service. While the fee was independent of the number of calls per month, it differed with the type of service furnished, i.e.,business and residence charges usually differed and the rates were less for party than for individual line service.

[86] One of the unusual features of the Chicago coin service was that the use of slugs in home phones became quite common at one time. The collector on his monthly visit would separate out the slugs from the nickels and present them to the phone user who would redeem them in legal tender. The wide use of nickel slugs on a private basis obviously presented complications in the use of public telephones and other coin-operated devices and resulted in the use of special tokens of complicated design in place of nickels. These complications provided added reasons for discontinuing the home coin box but many users were reluctant to give them up, especially when use was shared with neighbors. In Chicago, residential coin boxes were discontinued as a new service offering at the end of 1937, but existing subscribers to this service were allowed to continue. Even though equivalent message rate service at the same cost had been offered as a replacement, it was not until 1958 that the number of coin boxes declined to about 1,000 and the service could be discontinued. Cincinnati had discontinued residential coin service about ten years earlier.

Chicago City Officials Recommend Meter for Use on Subscriber's Telephones

An interesting test of the regulative powers of a municipality over the telephone business may soon arise in connection with a recent recommendation of a committee representing the City of Chicago.

Acting under powers conferred by the ordinance governing the operations of the Chicago Telephone Company, this committee, consisting of Commissioner Hangerg, Corporation Counsel Brundage and Alderman Snow, after investigation, has recommended that the Chicago Telephone Company install a service meter of the type manufactured by the Measured Service Company, in which officials of the American Electric Telephone Company are interested. The ordinance provides that as soon as a satisfactory meter is on the market it shall be installed by the telephone company at the station of each subscriber using service of a certain class.

The description of the meter recommended, and its method of operation, is as follows:

The instrument is designed to be placed upon the telephone subscriber's premises and operated in such a manner that the subscriber always has before him a record of the total number of telephone conversations carried on and further contains features which permit of the telephone exchange operators or clerks securing information as to the total number of times a given subscriber's telephone has been used within a certain period.

The subscriber registers by pulling down a lever, advancing the counter one number; a buzz notifies the operator of the act. Registry is made at the request of the operator, after she observes the answer of the called subscriber.

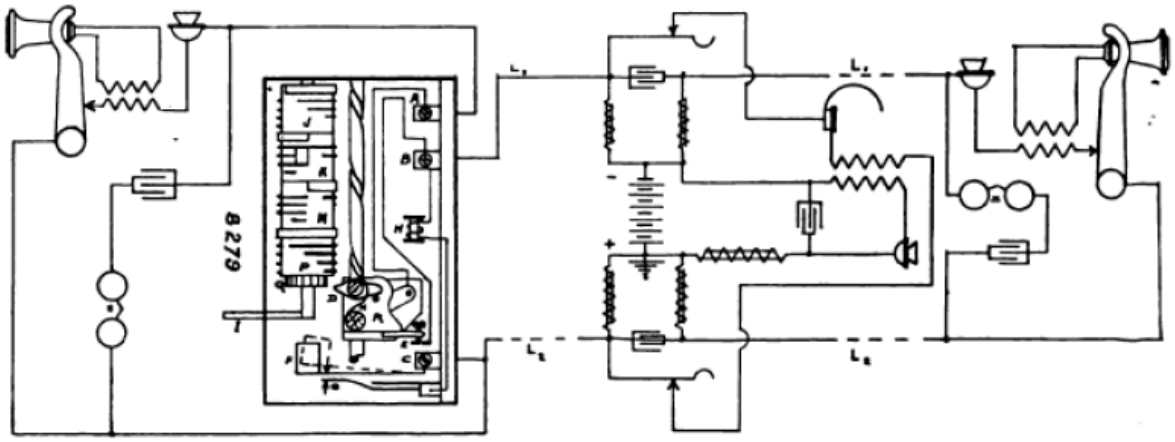
Statements are furnished, on request by the subscriber manipulating a special lever. This operates clockwork which records in dots and dashes, on a tape controlled by electro-mechanism which may be wired to a plug for connection to subscribers' lines. The operator obtains a verification by telephone at the time this count is taken.

Although the committee representing the city has recommended a particular type of meter, the telephone company seems disposed to use an altogether different type, if any at all.

An official of the Chicago Telephone Company stated that the company has a telephone service meter for use at all subscribers' stations which it believes will work in a satisfactory manner. The meter is enclosed in a metal case which may be fastened to desk or wall in a location convenient to the user of the telephone. It is of the push button type, that is, the subscriber has to press a button when giving the operator the number of the subscriber desired. The act of pushing the button sets a spring which is operated by the armature of a double wound electromagnet. After the number called for is obtained the operator presses a button throwing current through one coil, attracting the armature to that coil, and causing the spring to operate so as to register on a counter, which is in full view of the subscriber. In case the number called for is not obtained the operator throws current through the other coil and releases the spring, which in turn releases a striker to sound a signal, thus notifying the subscriber of the inability to get the desired number.

The mechanism, which in many respects resembles mechanism for coin box telephones, covered by patents which have been reviewed in Telephony from time to time, was designed by the engineers of the Chicago Telephone Company and A. T. & T. Company.

The number of subscribers to the metered service in the telephone company's system is in the neighborhood of 8,800. For some time, in the main office of the company, a meter has been used on the switchboard for keeping track of the calls. This is reported to have given satisfaction to the extent that subscribers have made no complaints against it. The city ordinance, however, requires that a service meter shall be installed at every subscriber's telephone on the meter service plan. The telephone company states that there has been no demand for the meters from the subscribers.



Circuit Showing Connections of Service Meter Recommended for Chicago.