

the end of the truck timber, where it is secured. The chain, K, runs directly down to the truck timber. By turning the shaft, I, in one direction the car is dumped on one side of the track, and by turning it in the other direction the load is discharged on the opposite side of the track. This result is secured by winding one of the chains, I J, while the other is unwound. The worm gear affords ample leverage for operating the shaft, I, so that the car may be dumped by one man standing on the platform.

The merits of this dumping car will be understood and appreciated by railroad engineers, superintendents, and managers, who are familiar with the imperfections of the ordinary cars.

Any further information in regard to this invention may be obtained by addressing the New England Car Company, 48 Congress street, Boston, Mass. Mr. Simeon Brownell is general manager and sole agent for the United States.

**THE GOWER SYSTEM OF TELEPHONIC COMMUNICATION, PARIS.**

At present there are two telephone companies in Paris, one using the Gower telephone, the other the Edison. A third company introduced the Blake transmitter, but was soon consolidated with the Gower Company, who were the first to introduce telephonic communication in Paris. The Gower telephone, of which an exterior view and sections are shown in Figs. 1, 2, and 3 of the annexed engravings, requires no battery, as the currents for transmission of sounds are generated by the instrument, and it is provided with a peculiarly arranged magnet, by means of which a sound resembling that of a trumpet can be produced for signaling. Each subscriber is provided with a telephone connected with the main central office by means of an insulated wire, which is laid underground. A great difficulty is experienced in insulating the wires sufficiently to avoid the effects of induction. When several wires pass in one direction they are united in a cable, and the covering of the wires is of different colors, so that a wire may be traced very readily in case of accidents. At the central office the cable is separated, and each wire is conducted to its special office connection. To better explain the operation of this telephone system we will describe it in action. Each subscriber is known by a certain number. Assuming that No. 5 desires to communi-

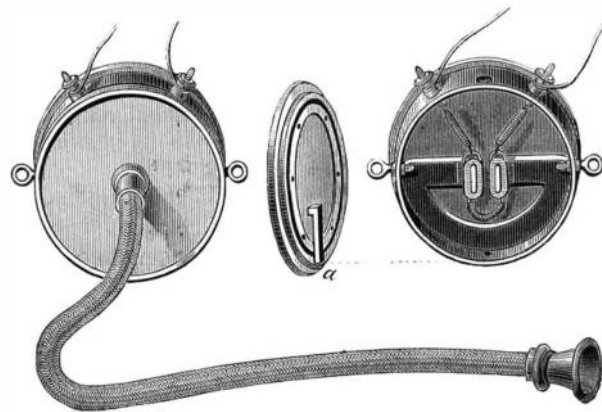


Fig. 1, 2, 3.—THE GOWER TELEPHONE.

cate with another subscriber, he gives the signal by blowing into the tube of his telephone.

The Gower Company, desiring to maintain the simplicity of the instrument, have adopted a signaling device invented by Mr. Ader, which answers in every respect. It is illustrated in Figs. 4 and 5. A is the magnet of a telephone, and the subscriber's wire communicates with the bobbins, B B. R is the vibratory tongue, fixed at its lower end. The signal consists of a white disk with the word "Answer" printed on it, and it may also bear the number of the corresponding subscriber. This disk is attached to a pivoted lever, which can be locked in an inclined position, so as to keep the disk out of sight by means of a rod attached to it and terminating in a triangular stud, which passes into a slot in the upper end of the vibratory tongue, R. The signal disk will drop until its lever arm is perpendicular, when released by the vibration of the tongue, R, and it will then be visible through an opening in the box of the apparatus. When the sound signal is given the plate, R, vibrates, and at each vibration the triangular stud, C, will slip out of the slot in the plate a very short distance and finally leave it altogether when the disk shows. The sound signal is required to operate this visible signal, as the vibrations produced by the ordinary speaking are not powerful enough to operate this mechanism.

A call bell is sometimes arranged so as to sound when the disk drops, and it is of great service in case the switchman is not at his post, as it calls attention to the fact that he is wanted. Generally six signaling devices are arranged in one box, as shown in Fig. 7, and the signal box with the call bell is arranged above the switch, as shown in Fig. 8.

The subscribers' wires are arranged in groups of about thirty, those persons communicating with each other very frequently being united in one group. Each switchman

has charge of a signal box and switch, represented in Fig. 8, which shows only ten subscribers, whereas there are twenty to thirty or more in each division, as before stated. A box

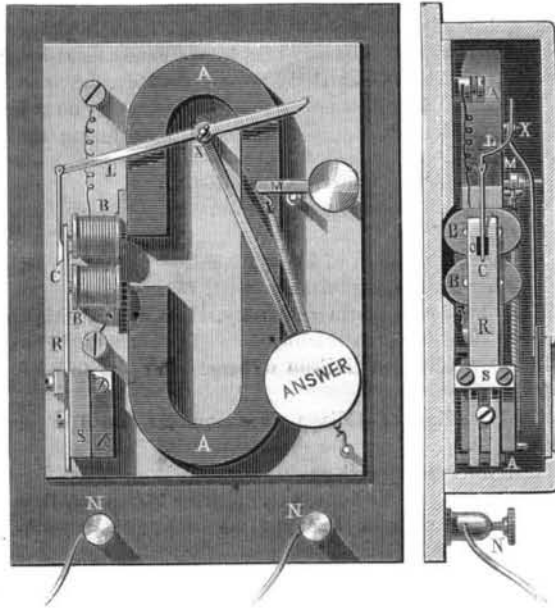


Fig. 4, 5.—THE SIGNALING APPARATUS.

containing the Ader signals is represented in the upper part of the cut; the white circles, with the numerals above them, representing the small windows or openings through which the disks can be seen when they have dropped. The call bell, which can be brought into action when required by means of a commutator, I, is mounted on top of the signal box. The plug switch, which is arranged below the signal box, consists of a series of vertical bars of metal, one for each subscriber, and a series of horizontal bars of metal arranged behind the vertical bars in such a manner that the two series do not touch each other, but are perforated at the crossings, so that a communication between a vertical and a horizontal bar can be established by passing a plug through the said perforations at the intersection of the bars. Each vertical bar is provided with a pin, and in Fig. 8 all the pins are represented as connecting the vertical bars with the lowest horizontal bar connected with a ground wire. Supposing the subscriber to have given his signal, and thus notified the switchman that he desires to communicate with another subscriber, the switchman takes the plug from the transverse bar and places it into the aperture at the crossing of the bar, No. 5, with the second horizontal bar, and he is now in communication with No. 5, and asks him with whom he desires to communicate. No. 5 replies that he desires to be connected with No. 9. The employe then resets the signal of No. 5, and connects No. 9 with the second bar by means of the plug in the manner described, and is thus in communication with No. 9, and gives the signal, which may be a simple sound

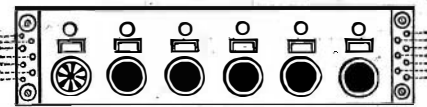


Fig. 7.—ANNUNCIATORS.

signal, the Ader visible signal, or the call bell, as the subscriber may have arranged it at his house or office. No. 9 is then notified that No. 5 wishes to communicate with

him, and No. 5 is notified that No. 9 is ready, the pins of the vertical bars, Nos. 5 and 9, having been placed above one and the same transverse bar, for instance, A, Nos. 5 and 9 are connected, and can converse with each other with complete privacy.

It must be stated that the disks of 5 and 9 have been raised, and as soon as their conversation is over Nos. 5 and 9 blow into the tubes of their telephones, thus notifying the switchman, who places the two plugs back in the bar connected with the ground wire. But if No. 3 and 7 wish to communicate at the same time that 5 and 9 are in communication, the pins belonging to 3 and 7 must be passed into the apertures at the intersection of the vertical bars, 3 and 7, with the second transverse bar, B, and in like manner, the next two subscribers are connected by means of the bar, C, and so on. These connections, however, only relate to subscribers of one and the same group or division. If the subscribers belong to separate divisions the connections are a little more complicated. If, for instance, No. 5 notifies the switchman that he desires to converse with No. 83, who is not in his group, which may be designated by A, and comprises the subscribers from 1 to 30, but probably will be found in group, C, comprising the subscribers from 60 to 90, the switchman passes the pin of No. 5 through one of a number of horizontal bars located between the bar, D, and the second bar, not shown in drawings, and then writes on a slip of paper: "The subscriber 5, group A, line 6 (for example), desires to be connected with No. 83, group C," and sends this slip to the group C. The switchman in charge of this group notifies No. 83, and then connects him with the line 6. He then sends the slip to the employe in charge of the grand commutator, where the groups A and C are connected in the line 6, thus permitting No. 5 to con-

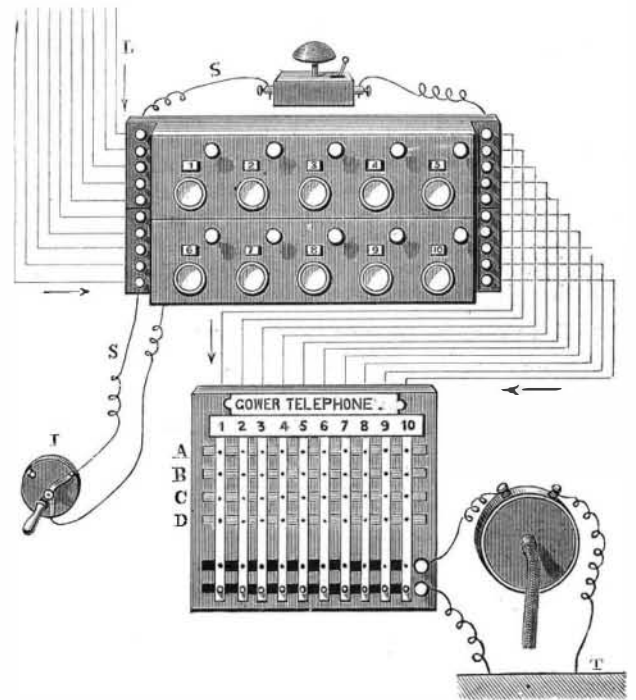


Fig. 8.—ANNUNCIATORS AND SWITCHES.

verse with 83. As soon as they have completed their conversation they give the signals, and all the pins are replaced into their former position.

In the annexed cut we give an exact representation of the central station, showing the cases of each group arranged along the wall, and the grand commutator which connects 50 lines in the rear.

This system requires no batteries either for calling or transmitting. There are at present one hundred subscribers connected in Paris, and five hundred applications have been received.—*La Lumière Electrique.*

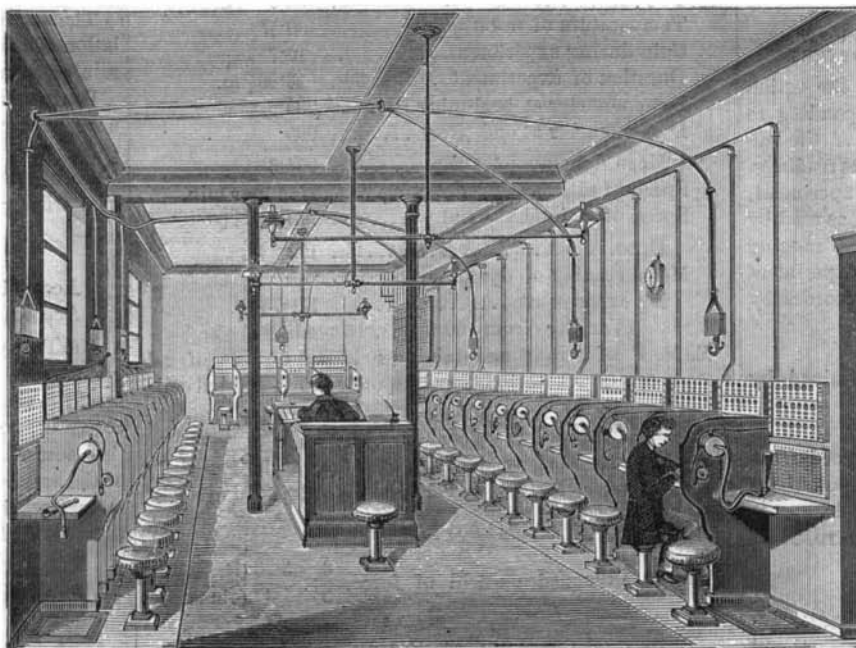
**NEW INVENTIONS.**

Messrs. Jacob Waggoner and George E. Waggoner, of Perrin, Mo., have patented an improved harrow so constructed that it may be adjusted wide or narrow, as the work to be done may require.

A simple and effective machine for moulding and pressing bricks has been patented by Mr. James A. Reeder, of Corinth, Miss. The invention consists in combining, with a brick machine plunger, graduated arms to raise and lower it, for the purpose of regulating the quantity of clay that enters the mud box.

A lamp stand or body of separate parts that fit within or over each other and are held together by one bolt, and provided with detachable handles or side ornaments, has been patented by Mr. Joseph Kintz, of West Meriden, Conn.

An improved salt cellar and pepper box, patented by Mr. William C. Beattie, of Taunton, Mass., consists in an oval-bottomed egg-shaped metal box, divided transversely, and having its sections connected detachably with a screw-thread, and having also one end perforated with holes through which the salt or pepper can be sifted, and the other end weighted or slightly flattened, or both, so as to cause the box to set upright.



CENTRAL OFFICE.