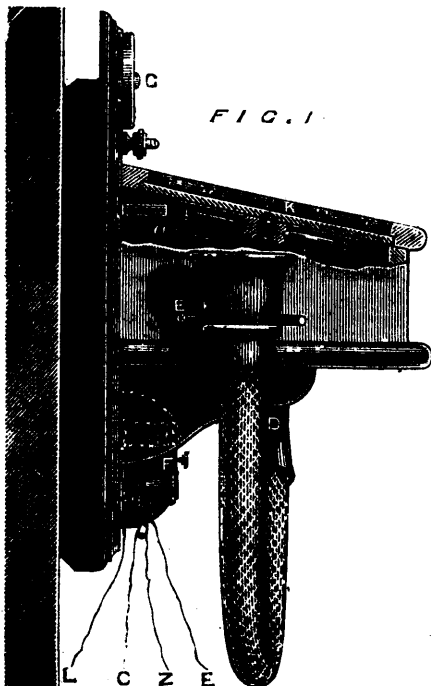


the brass rails, into which it fits with but slight friction, without communicating any current to the line wires when not placed on points of contact.

THE NEW GOWER TELEPHONE.

The following description and illustrations of the new Gower telephone, in which a microphone is employed as a transmitter, and which is so constructed that it can be used with or without a battery, will be of interest at a time when the Post-office authorities are making preparations for supplying telephonic communication in all parts of the country. The invention, which has been recently patented by Mr. F. A Gower, of Paris, consists in the combination of what is known as the Gower telephone with a microphone inclosed in the same case. This arrangement affords all the advantages obtained by the employment of a battery for the purposes of telephonic communication, without its accompanying objections, and without destroying the effect of the telephone when it is employed as a transmitter in the case of a



battery failing to act or becoming exhausted. Fig 1 is a side elevation of the apparatus partly in section, a portion of the side of the box being removed in order to show the communication between the microphone and the principal circuit. Fig. 2 is a plan, the microphone being removed in order to show clearly the arrangement of all the parts of the interior of the box. Fig. 3

is a plan of the underside of the microphone shown in Fig. 1. This microphone is connected with the principal circuit by means of wires which are broken off in Figs. 2 and 3.

It will be readily understood that when the plate of the microphone is in the position shown in Fig. 1, so as to close the box, the wire *a*, Fig. 3, is joined to the wire *a*, Fig. 2, and the wire *ax*, Fig. 3, is joined to the wire *ax*, Fig. 2. In constructing the apparatus according to this invention a microphone B, of any suitable construction (but by preference having at least six contact points) is attached to the upper part K of a box, the lower part of which box is provided with a Gower telephone C constructed in the form known as the chronometer telephone. This telephone is provided with a bifurcated acoustic or speaking tube D, having two branches, in order to enable the operator to listen with both ears if required. Commutators E are provided at the side of the box for the purpose of interrupting the passage of the current from the battery and opening the circuit of the call-bells. After working the apparatus the extremities of the acoustic tubes D are placed in holders connected with the commutators E, and the circuit is thereby interrupted. An electric call-bell F is provided underneath the box, and a knob G for working the call-bells is placed at the upper part of the apparatus, but this arrangement is not essential to the working of the invention. An induction coil H is placed inside the box, and the microphone B and the battery are connected to the primary circuit, whilst the Gower telephone and the line are connected with the secondary circuit. In speaking against the upper part K of the box, which part may be of wood, iron, brass, or other suitable material, and near or upon the under surface of which the microphone is placed either with or without attaching the microphone to the box top directly, the sound-waves from the voice form electrical undulations in the primary circuit through the action of the microphone, and these undulations are reproduced in the secondary circuit by induction, and are thus repeated in the Gower telephone at the receiving station.

Especial attention is directed to the fact that the microphone in this combination is not necessarily attached to the box top, but that it may be carried upon a framework of wood, metal, or other suitable material attached at any convenient point of the combined apparatus.

The undulations, however, when so reproduced are intensified to such an extent by the great power of the magnet in the Gower telephone, that they act upon the microphone in the same case with such effect as to set up corresponding undulations in the primary circuit of the receiving station, and these undulations are again reproduced in the Gower telephone with increased intensity.

Moreover, when the diaphragm of the telephone is provided with a vibrating reed *x*, Fig. 2, as is usual in the Gower telephone, it is simply necessary to close one of the branches of the acoustic tube and blow into the other branch in order to cause the reed to vibrate, and thus produce powerful vibrations of the plate before the magnet. These vibrations not only produce currents in the coils or the poles of the magnet, but also act with great power upon the microphone, the sound being produced in the interior of the same box, and thus double the effect of the signal current on the line wire without exhausting the battery to any greater extent than when speaking in the usual manner through the apparatus.

