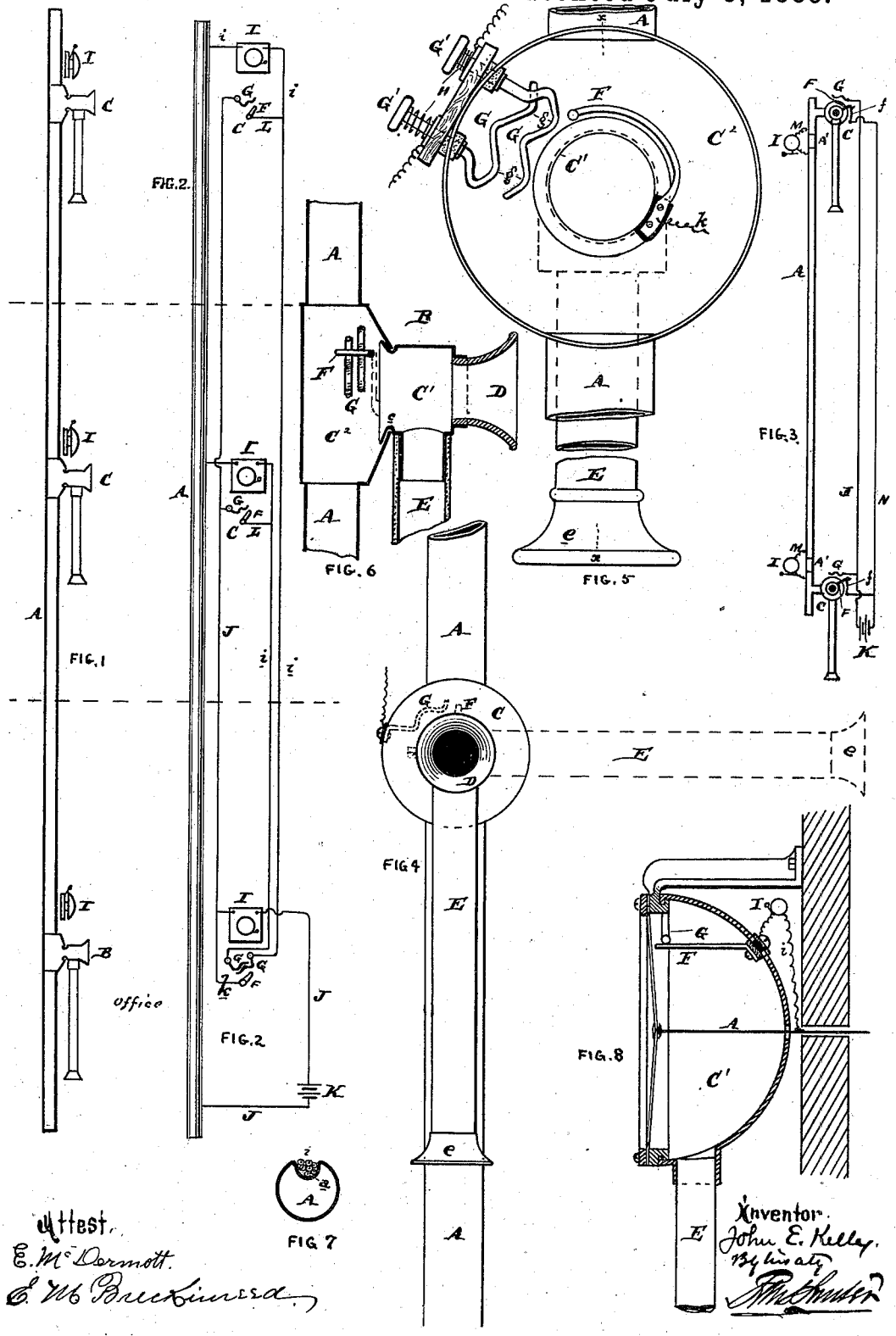
(No Model.)

J. E. KELLY.

COMBINED SPEAKING AND SIGNALING APPARATUS.

No. 385,357. Patented July 3, 1888.



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JOHN E. KELLY, OF CAMDEN, NEW JERSEY.

COMBINED SPEAKING AND SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 385,357, dated July 3, 1888.

Application filed May 12, 1887. Serial No. 238,017. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. KELLY, of Camden, county of Camden, and State of New Jersey, have invented an Improvement in Combined Speaking and Signaling Apparatus, of which the following is a specification.

My invention has reference to speaking-tubes and analogous apparatus and signaling devices therefor; and it consists of certain improvements, all of which are fully set forth in the following specification, and shown in the accompanying drawings, which form part thereof.

In my application filed August 30, 1886, Serial No. 212,143, is described a form of speaking-tube and transmitting-instrument in which the ear-tube may be turned to suit the right or left ear. In this application I employ substantially the same construction and utilize the movements of the ear-tube to operate the signals. The signals are operated electrically, so that the bell at the transmitting-station as well as that at the receiving station are simultaneously rung when the person desiring to send the message lifts the ear-tube into position to the ear. By this means the sender of the message is always assured that his bell is in working order. The speaking-tube or the telephone-wire in the mechanical telephone is used as the return-conductor for the circuit.

In the case of hotels the speaking-transmitter in the office is provided with a key-board which connects the battery-circuit with any room desired, the device when set operating in substantially the same manner as in the case of two station connections above referred to. In the case of speaking-tubes used in systems like this I form it with a groove, into which the outgoing conductor-wires are placed for compactness and convenience.

The various details may be modified and the circuits coupled up in various ways without departing from my invention.

In the drawings, Figure 1 is a sectional elevation of a speaking-tube with the speaking and hearing apparatus on the various floors. Fig. 2 is a diagram illustrating the connections whereby the electric signals may be operated in the manner suitable to hotels. Fig. 3 is an elevation representing my improved speaking-tube and its various mechanical electric connections where only two stations are employed. Fig. 4 is a front elevation of the transmitting and receiving apparatus shown in Fig. 1. Fig. 5 is a rear elevation of same, showing the key-board attached. Fig. 6 is a sectional elevation of same on line *x x*. Fig. 7 is a cross-section of the speaking-tube, and Fig. 8 is a sectional elevation of a mechanical telephone having my system of electric signal applied thereto.

The construction of receiving and transmitting apparatus shown in the various figures, whether for speaking-tubes or mechanical telephones, is in all material respects the same as that set out in my application filed August 30, 1886, Serial No. 212,143, and therefore in this application the essential feature of the invention relates to signaling apparatus when combined and operating in conjunction with and by the manipulation of the transmitting and receiving instruments.

A represents the speaking-tube, which may be extended from floor to floor as desired.

B represents the receiving and transmitting attachment therefor in the office of the building, and C represents the receiving and transmitting apparatus on the various floors or in the various compartments. In construction these receiving and transmitting instruments B and C are substantially the same, each consisting of a chamber, C^2, in which the speaking-tube sections enter, and to which is pivoted, at *c*, a tubular part, C′, terminating in a fixed mouth-piece, D, and in a laterally-extending flexible ear-tube, E, terminating in an ear-piece, *e*. From this construction it is evident that normally or when out of use the ear-tube E hangs down vertically, but when raised to a position for either the right or left ear (for instance as indicated in dotted lines, Fig. 4) the tubular part C′ is rotated a quarter of a revolution, or thereabout, and this movement, through the mediation of contact-fingers G F, is caused to operate the signals. Thus the act of bringing the transmitting and receiving instrument into operative position causes the signals to be rung at either or both ends of the line. The contacts are shown in Figs. 4 and 5, in which it will be seen that F is simply a bent wire, preferably having an amount of flexibility, and contact G is made W-shaped, with the lower

bends *g* in the path of the contact-finger F, so that as these contacts pass each other two successive alarms are sent down the line.

The contact G is so secured to the chamber C^2 as to be insulated from it, and is therefore stationary, whereas the contact F is secured to the rotatable part C′, and moves with it when raising the ear-tube to the ear.

In the case of the office transmitting and receiving instrument, Figs. 5 and 6, there are as many contact-fingers G as there are instruments C connected with the line, and these contact-fingers are held out of the operative position by springs H, and may be pressed into operative position by pushing upon the buttons G′. As shown in Fig. 5, one of these contact-fingers is pushed into operative position and the other is held out of such position.

Referring now to Fig. 2, we have the contact-fingers G of the receiving-instrument C in connection with one pole of the battery K by a circuit, J, which includes the signal bell I in the office. The other pole of the battery is connected with the speaking-tube. The contact-fingers F carried by the part C′ would be insulated therefrom. The finger F of the transmitter B would be connected with the circuit J by a wire, *k*, so as to connect with the battery K through its signal-bell I. The contacts F of the transmitters C connect, respectively, with contacts G of office-transmitter B by wires L *i*, and they are also connected with signals I, as shown.

The operation may now be described as follows: The clerk in the office may signal either of the stations C C by simply pressing in the corresponding contact, G, and then lifting the ear-tube. This will cause the current to pass from battery K through circuit J, signal I, circuit *k*, contacts F G, either one of circuits *i*, signal I of the station C to be signaled, and return by tube A to battery K. If a person at station C desires to call up the office, the lifting of the ear-tube will cause the contact F to close the circuit with G. We will then have the current from battery K, circuit J, through signal I in office, through contacts F and G, wire L, circuit J, signal I at the transmitting-station, and return by tube A to battery. These various wires, J *i*, may be inserted in a longitudinal groove, *a*, formed in the face of the speaking-tube A, as shown in Fig. 7, and thereby be conveniently conveyed through the building.

In the case of the telephone transmitter and receiver, Fig. 8, the operation will be substantially the same as in this case. The part C′, when rotated by lifting the ear-tube E, will remove the finger F over contact G, the circuits being coupled up in substantially the manner employed with the speaking-tube.

Referring now to Fig. 3, in which two stations only are used, I may employ a modification of what is shown in Fig. 2, in which case the contact F would not be insulated, but would be in connection with the speaking-tube A as a conductor. In this construction the speaking tube near each end is provided with a small insulating-section, A′, of glass or porcelain or other vitreous substance, which are bridged by circuits M, including the signal-bells I. The contact F normally rests in contact with a finger, *f*, which connects by circuit N with one pole of battery K, and the two contacts G are connected together and with the other pole of the battery by a circuit, J. It will now be observed that by turning the contact F in the lower transmitter it will break the circuit at *f* and close the circuit at G. The effect of this will be that the current will pass from battery K through contacts G F, tube A, and both bells I, contact-fingers F and *f* at the upper station, and by wire N to battery. This will signal both stations. The reverse operation will operate in the same manner, whereby the upper station may signal the lower.

It will be seen that when lifting the ear-tube to the ear the signals are rung, and after getting through with the conversation the fall of the ear-tube rings the signals to indicate that the operator is through.

It is evident that the particular features of the circuits may be modified in a large number of ways without changing the invention, the essential feature of which is the signaling through the movement of the transmitting or receiving instruments. Therefore, while I prefer the construction shown, I do not limit myself thereto.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a speaking-tube, two mouth-pieces, and hearing or ear pieces, arranged in pairs and at a distance apart, and in which each mouth-piece has a movable ear-piece, an electric circuit, including electric signals in said circuit and located near the ear-piece, and switches operated by the movable ear-piece to complete or break said circuit to ring the distant signal.

2. The combination of a speaking-tube, two mouth-pieces, and hearing or ear pieces, arranged in pairs and at a distance apart, and in which each mouth-piece has a movable ear-piece, an electric circuit, including electric signals in said circuit and located near the ear-piece, and switches operated by the movable ear-piece at one transmitter to complete or break said circuit to ring the home and also the distant signal.

3. The combination of an office speech-transmitting instrument, two or more distant transmitting-instruments, the office-transmitter having a movable ear-piece, electric signals at the office and distant transmitting-instruments, a separate electric circuit to connect each of the distant signals with the office, two or more circuit-controlling devices operated by the movable ear-piece of the office-transmitter, and key-board to bring either circuit-controlling device into operative position.

4. The combination of an office speech-

transmitting instrument, two or more distant transmitting-instruments, all of said instruments having movable ear-pieces, electric signals at the office and distant transmitting-instruments, a separate electric circuit to connect each of the distant signals with the office, two or more circuit-controlling devices operated by the movable ear-piece of the office-transmitter, a key-board to bring either circuit-controlling device into operative position, and a signal in the office, also operated by the movable ear-piece, whereby the office and distant signals are simultaneously rung.

5. The combination of an office speech-transmitting instrument, two or more distant transmitting-instruments, all of said instruments having movable ear-pieces, electric signals at the office and distant transmitting-instruments, a separate electric circuit to connect each of the distant signals with the office, two or more circuit-controlling devices operated by the movable ear-piece of the office-transmitter, a key-board to bring either circuit-controlling device into operative position, an electric circuit from said distant transmitting-instruments, including the office-signal, and circuit-controlling devices operated by the movable ear-piece of either of said distant transmitters.

6. The combination of an office speech-transmitting instrument, two or more distant transmitting-instruments, all of said instruments having movable ear-pieces, electric signals at the office and distant transmitting-instruments, a separate electric circuit to connect each of the distant signals with the office, two or more circuit-controlling devices operated by the movable ear-piece of the office-transmitter, a key-board to bring either circuit-controlling device into operative position, an electric circuit from said distant transmitting-instruments, including the distant and office signal, and circuit-controlling devices operated by the movable ear-piece of either of said distant transmitters to simultaneously ring the office and distant signals.

7. A speech-transmitting instrument consisting of a stationary part and a movable ear-piece, a signaling contact-finger secured to the stationary part, and a signaling contact-finger secured to the movable ear-piece, said contacts being insulated from each other and adapted to touch upon moving the ear-piece, and a signaling-circuit including said contacts.

8. A speech-transmitting instrument consisting of a stationary part and a movable ear-piece, in combination with two or more movable signaling contact-fingers carried by the stationary piece, and a movable signaling contact-finger carried by the ear-piece, whereby either contact carried by the stationary piece may be moved into operative position for contact with the movable contact-finger carried by the ear-piece, and signaling-circuits, each including one of said contacts.

9. The combination of stationary part C^2 with movable part C′ of a transmitting device for speech, a movable spring contact-finger, F, secured to part C′, and a stationary contact-finger, G, made W-shaped, to interrupt the circuit, substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

JOHN E. KELLY.

Witnesses:
R. M. HUNTER,
ANDREW ZANE, Jr.