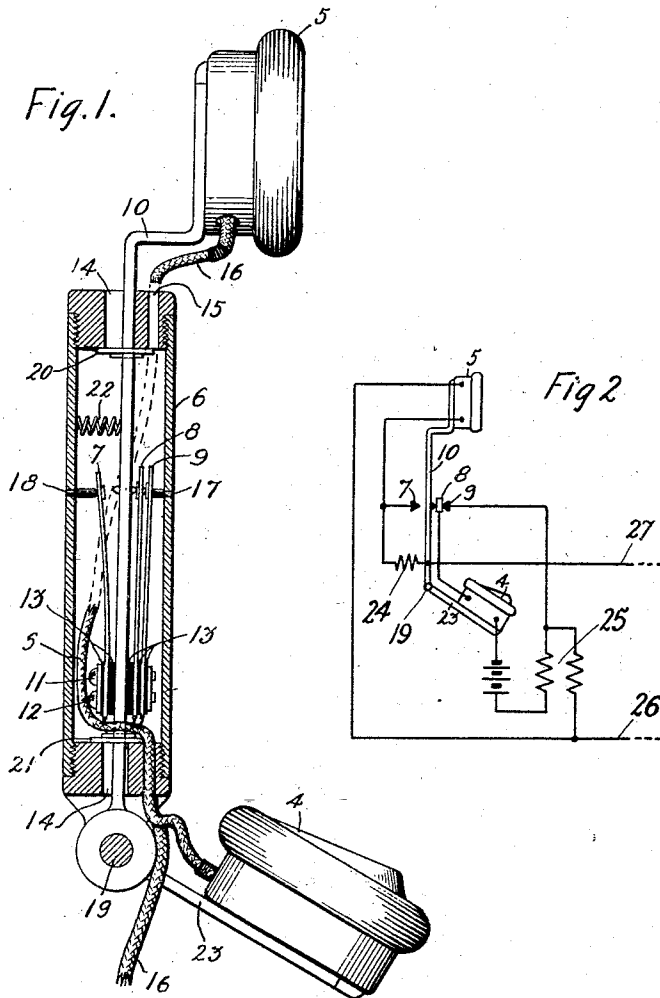


R. R. HERRMANN.
TELEPHONE SET.
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1,340,955.

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UNITED STATES PATENT OFFICE.

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TELEPHONE SET.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, RAYMOND R. HERRMANN, a citizen of the United States, residing at New York, in the county of Bronx, State of New York, have invented certain new and useful Improvements in Telephone Sets, of which the following is a full, clear, concise, and exact description.

This invention relates to telephone sets and more particularly to sets of a type which are known as hand sets in which the receiver and transmitter are assembled to form a unitary structure. In using a telephone set and more particularly a hand set, there is a tendency on the part of the user when receiving telephonic transmission to press the receiver against his ear and also an opposite tendency while talking to release the pressure of the receiver upon his ear.

In accordance with a feature of the invention, advantage is taken of this tendency by utilizing the pressure on the receiver when it is pressed against the ear of the user to bring about certain circuit changes.

It is an object of the invention to provide a hand set which is particularly adapted for use in locations where there is considerable extraneous noise, for instance, in situations such as are encountered in railway systems. Therefore, in accordance with a related feature of the invention, the circuit changes which are accomplished by the varying pressure on the receiver are utilized to minimize the effect of the transmitter upon the receiver while telephonic transmission is being received and to also reduce the efficiency of the receiver while the transmitter is being used. More specifically the circuits are switched so that while the transmitter is in use, a high resistance is connected in series with the receiver, and while the receiver is in use, the transmitter circuit is entirely severed. As a result of this operation external noises which may affect the transmitter during the receiving of a message are without effect, as the transmitter circuit is open, and extraneous noises which may affect the transmitter while a message is being transmitted through the set, will have a minimum effect upon the receiver.

According to a further feature of the invention, while the effect of external noises is minimized in the receiver while the transmitter is in use, nevertheless the receiver is maintained in connection with the line so

that if the party to whom a message is being communicated should desire to interrupt the message, such interruption may be heard at the receiver with sufficient distinctness to call the attention of the transmitting party to the necessity of pressing the receiver closer to his ear, which will result in increasing the efficiency of the receiver.

This and other features of the invention will be more clearly understood from the following specification and the accompanying drawings, in which Figure 1 is a view of a hand set constructed in accordance with the invention, the handle portion thereof being shown in section; and Fig. 2 is a diagrammatic representation of the circuits employed in connection with such hand set.

The set disclosed in Fig. 1 of the drawing comprises the handle portion 6 which serves as a support for the transmitter 4 and the receiver 5. The transmitter 4 is mounted upon an arm 23 which is pivoted at 19 to one end of the handle 6. Also mounted upon the pivot 19 and free to swing thereon is a lever 10 which extends up through the hollow portion of the handle 6, passing through the apertures 14 at either end thereof. The transmitter 4 is pivoted to the handle merely for the purpose of permitting adjustment of its position to meet the convenience of the user. The receiver 5 in connection with the lever 10 upon which it is mounted, is arranged to cooperate with a plurality of contact springs 7, 8 and 9, which also cooperate with a pair of insulated pins 17 and 18 secured to the inner wall of the handle. The lever 10 is held in the position shown in the drawing, which is the normal position of the apparatus when not in use, by means of a coil spring 22. The contact springs 7, 8 and 9 are insulated from each other and from the lever 10 by means of pieces of insulation indicated at 13, and are secured to the lever 10 by means of the screws 11 and 12. The cord 16, by means of which the set may be associated with a telephone line, extends within the handle and includes a plurality of conductors. These conductors are distributed to the various contact springs and to the receiver and transmitter to provide the circuit connections shown in Fig. 2. The lever 10 carries in its upper and lower portions adjacent to the end of the handle the disks 20 and 21, which operate to maintain the apertures 14 at the ends of the handle closed

when the lever 10 is in either position, for the purpose of excluding foreign substances from the handle.

When in use, the transmitter 4 is held adjacent the mouth of the user, and the receiver 5 adjacent the ear of the user. If a message is being received, the receiver 5 is pressed closely against the ear and consequently the lever 10 is moved relative to the handle portion 6 to compress the spring 22. This movement of the lever 10 opens the contact between the lever 10 and the contact springs 8 and 9, and closes the contact between the lever 10 and the contact spring 7. While a message is being transmitted, the pressure on the receiver 5 is released and the lever 10 returns to the position described above.

Referring now to the circuit diagram shown in Fig. 2, the operation may be described, assuming for example, that the user is transmitting a telephonic message out over the telephone line indicated at 26 and 27. Under these conditions, as the pressure of the receiver 5 upon the ear of the user is relaxed, the circuit connections are as indicated in Fig. 2, that is, the contact between the lever 10 and contacts 8 and 9 is made. Under these conditions a local circuit is provided for the transmitter, including the contacts 8 and 9, on winding of the induction coil 25 and the transmitter. Voice currents generated in this local circuit are impressed upon the telephone line through the secondary of the induction coil 25 and through the contacts 8 and 9 and the lever 10. It will be observed that under these conditions, due to the fact that the contact between the lever 10 and the contact 7 is broken, the receiver 5 is connected to the telephone line 26 and 27 through the resistance 24. This, of course, will lower the efficiency of the receiver so that the user will not be annoyed by hearing his own conversation through the action of the transmitter, and furthermore, external noises which may act upon the transmitter will only be faintly reproduced in the receiver. On the other hand, the efficiency of the receiver is not decreased to such a point that should the party to whom a message is being transmitted desire to interrupt, such interruption will be heard in the receiver. While the interruption may not be distinctly heard in the receiver, it will be heard to a sufficient extent to cause the user to press the receiver 5 against his ear and consequently by operating the contact between the lever 10 and contact 7 shunt the resistance 24.

When receiving a message, due to the fact that the receiver 5 is pressed against the ear of the user, the contact between the lever 10 and contacts 8 and 9 is broken and the contact between the lever 10 and contact 7 is made. This connects the receiver directly to the line and opens the local circuit of the transmitter, bringing about a condition

which is conducive to maximum efficiency of the receiver.

What is claimed is:

1. A portable telephone set comprising a substantially cylindrical frame, an actuating lever pivoted in one end thereof and extending to the other end, a receiver mounted on the free end of said lever, a transmitter also supported by the frame, and contact springs mounted on but insulated from the actuating lever and cooperating therewith to separately control the transmitter and receiver circuits.

2. A portable telephone set comprising a substantially cylindrical frame, a switching mechanism mounted within the frame, an actuating lever pivoted in one end and extending through the other end thereof, a receiver mounted upon the free end of the lever, and a transmitter supported by the frame, said lever being adapted to cooperate with the switching mechanism to separately control the transmitter and receiver circuits.

3. A portable telephone set comprising a substantially cylindrical frame, a switching mechanism mounted within the frame, an actuating lever pivoted in one end of the frame and extending through the other end thereof, a receiver mounted on the free end of said lever, a transmitter supported by said frame, circuits for said receiver and transmitter, said actuating lever having two operative positions, and means for normally maintaining said lever in operative position to cooperate with the switching mechanism so as to close the transmitter circuit and decrease the efficiency of the receiver circuit.

4. A portable telephone set comprising a substantially cylindrical frame, an actuating lever pivoted in one end thereof and extending to the other end, a receiver mounted upon the free end of said lever, means for rendering the receiver inefficient, a transmitter supported by the frame, circuits for the receiver and transmitter and contact springs mounted within the frame and controlled by the actuating lever when it is in its normal position to maintain the receiver circuit in its inefficient condition and the transmitter circuit closed and when moved about the pivot point to open the transmitter and to increase the efficiency of the receiver circuit.

5. A telephone set comprising a receiver and transmitter, a handle portion upon which said receiver is supported so as to be movable relative thereto, circuits for associating said transmitter and receiver with the telephone line, and switching means controlled by a relative movement of said receiver and handle when the receiver is pressed against the ear of the user to disable said transmitter circuit.

6. A telephone set comprising a receiver and transmitter, a handle portion upon which said receiver is supported so as to be movable relative thereto, circuits for associating said transmitter and receiver with the telephone line, and switching means controlled by a relative movement of said receiver and handle when the receiver is pressed against the ear of the user to disable said transmitter circuit and when the pressure on the receiver is relaxed to decrease the efficiency of the receiver.

7. A telephone set comprising a receiver and transmitter, a handle portion upon which said receiver is supported so as to be movable relative thereto, circuits for associating said transmitter and receiver with the telephone line, and switching means con-

trolled by a relative movement between said handle and receiver when the pressure of the receiver against the ear of the user is increased or relaxed to vary the efficiency of said receiver.

8. A telephone set comprising a transmitter, a receiver, circuits therefor, means to support said receiver for movement relative to said transmitter and switching means controlled by said relative movement to open and close said transmitter circuit and simultaneously vary the efficiency of the receiver circuit.

In witness whereof, I hereunto subscribe my name this 20th day of March A. D., 1918.

RAYMOND R. HERRMANN.