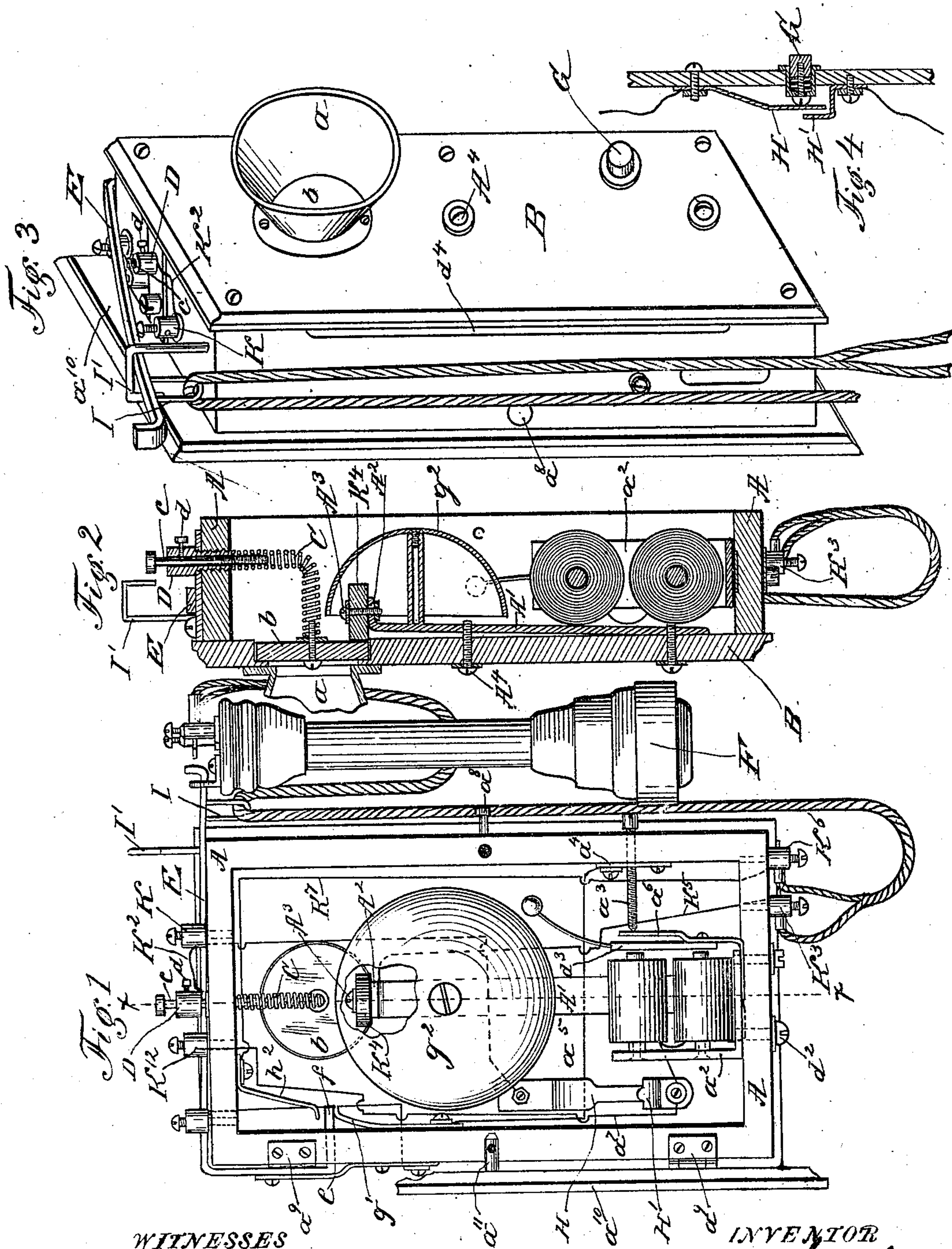


(No Model.)

M. GARL.  
TELEPHONE.

No. 555,239.

Patented Feb. 25, 1896.



**WITNESSES**

Thos. Miller

E. H. Smith

INVENTOR

Mamoo Gail

By Fred W. Bond Attorney



# UNITED STATES PATENT OFFICE.

MANIOUS GARL, OF AKRON, OHIO, ASSIGNOR OF ONE-HALF TO GEORGE W. LA VIGNE, OF SAME PLACE.

## TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 555,239, dated February 25, 1896.

Application filed April 4, 1895. Serial No. 544,400. (No model.)

*To all whom it may concern:*

Be it known that I, MANIOUS GARL, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Telephones; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a view showing the interior of the case or shell and the different parts belonging to the telephone proper located therein. Fig. 2 is a longitudinal section through line  $x x$ , Fig. 1. Fig. 3 is a perspective view of the case. Fig. 4 is a sectional view of the call push-button and its connection.

The present invention has relation to telephones; and it consists in the different parts and arrangement and combination of parts hereinafter described, and particularly pointed out in the claims.

Similar letters of reference indicate corresponding parts in all of the figures of the drawings.

In the accompanying drawings, A represents the case or shell, which is preferably formed by cutting out from a block the central portion of the block, so as to form the opening or space into which the different parts of the telephone belonging within the shell are placed.

To the front or forward portion of the shell A is attached in any convenient and well-known manner the plate or cover B, to which plate or cover is attached the speaking funnel or tube  $a$ , which is located substantially as illustrated in Fig. 3. Directly opposite the speaking funnel or tube  $a$  is located a diaphragm  $b$ , which diaphragm is held in proper adjustment with reference to the speaking-funnel by means of the L-shaped helical spring C, which spring is located and adjusted substantially as illustrated in Figs. 1 and 2.

The object and purpose of forming the spring C L-shaped or with horizontal and vertical portions are to increase the sensitiveness of the diaphragm.

For the purpose of adjusting the tension of the spring C the screw  $c$  is provided, which

screw is located within a portion of the spring C, and is elevated or lowered to adjust the elasticity of the spring, the horizontal portion of said spring being adjusted to hold the diaphragm in proper position with reference to the plate or cover B and the speaking-tube  $a$ .

For the purpose of holding the screw  $c$  at the desired point of adjustment the set-screw  $d$  is provided, which set-screw is located in the screw-cap D.

The receiver-arm E is substantially of the form shown in the drawings, and, as shown, it is extended upward and over the top or upper end of the shell A and carried or extended a sufficient distance beyond the edge of the case-shell to provide for suspending the receiver F.

For the purpose of automatically elevating the receiver-arm E when the weight of the receiver is removed therefrom the spring  $e$  is provided, which spring is attached by means of suitable screws or their equivalents to the shell or case and to the arm E, substantially as illustrated in Fig. 1, said spring being so adjusted that its free end will move away from the case or shell when the weight of the receiver is removed.

The receiver-arm E is provided with the inward projection or arm  $f$ , which is for the purpose hereinafter described. To the shell A is attached the post K, which post is connected with the diaphragm-post D by means of the wire  $K^2$  or its equivalent, which connects through the spring C to the diaphragm  $b$ , thence to the receiver-post  $K^3$  by means of the electrode  $K^4$  and the wire  $K^5$ , thence to the receiver F and back to the post  $K^6$ , said post being connected with the spring  $h^2$  by means of the wire  $K^7$ .

When the receiver F is removed from the arm E, or the weight thereof is taken off from said arm when in use, the arm or inward projection  $f$  connects with the spring  $h^2$ , which connection brings the transmitter or diaphragm  $b$  and the receiver into circuit.

When the receiver F is suspended from the arm E or placed thereon, said arm will be lowered. The arm or projection  $f$  connects with the spring  $g'$  and brings the bell  $g^2$  into circuit.

The spring  $g'$  is connected with plates  $a^4$



by means of the wires  $a^5$ , and thence from plate  $a^4$  to the adjusting-screw  $a^3$ , and thence through the armature-spring  $a^6$  and the magnet-frame  $a^2$ , then from between spring  $a^6$  and frame  $a^2$  to one of the magnets, then through the magnet to arm  $H'$ , then to post  $K^{12}$  by means of the wire  $a^7$ .

If at any time it is desired to open the case  $A$ , the pin  $a^8$  is removed, when the case is free to turn on the hinges  $a^9$ , said hinges being secured to the back plate  $a^{10}$ , which plate is properly secured to the wall or other suitable part of the building. The back plate  $a^{10}$  is provided with the stud  $a^{11}$ , which secures the shell in a closed position by means of the pin  $a^8$ .

For the purpose of using the diaphragm  $b$  as a combined diaphragm and electrode said diaphragm is formed entirely of carbon and attached direct to the spring  $C$ , thereby doing away with the necessity of clamping the diaphragm, inasmuch as it is held in proper vibratory position by the spring  $C$ .

It will be understood that other material may be used in the construction of the diaphragm, but I prefer to construct it of carbon.

It will be understood that the diaphragm constructed as above described forms within itself one electrode, the second electrode being formed by the carbon disk  $K^4$ , which carbon disk is attached to the spring or arm  $A'$  by means of the right-angled portion  $A^2$  and the connecting bolt or screw  $A^3$ , the tension of said spring or the adjustment thereof being regulated by means of the adjusting bolt or screw  $A^4$ , said spring  $A'$  being for the purpose of holding the electrode  $K^4$  in proper contact with the diaphragm  $b$ .

The magnet-frame  $a^2$  is attached to the frame or shell  $A$  by means of suitable screws, such as  $d^2$ , the spring  $a^6$  being located between the frame  $a^2$  and the shell  $A$ .

To the spring  $a^6$  is attached in the ordinary manner the armature  $d^3$ . Inasmuch as the bell  $g^2$  is located within the shell which to a certain extent if not provided for would muffle said bell; and for the purpose of preventing the bell from being muffled the open-

ings  $d^4$  are provided, said openings being located substantially as illustrated in Fig. 3.

The push-button  $G$  is located substantially as shown in Fig. 3, and when pushed inward comes in contact or rather forces the spring  $II$  into contact with the arm  $II'$ , thereby connecting the bell of the telephone to be called.

For the purpose of holding the arm  $E$  down so as to bring the bell in circuit when the receiver is suspended the loop  $I$  is provided and the ends connecting the receiver passed through the loop.

For the purpose of providing a stop against the upward movement of the receiver-arm  $E$  the hook  $E'$  is provided.

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

1. In a telephone the combination of the helical L-shaped spring  $C$ , having attached to the free horizontal portion of said spring the diaphragm  $b$  said diaphragm being free to vibrate with the spring, the electrode  $K^4$ , and a receiver, substantially as and for the purpose specified.

2. The combination of a telephone-case having connected thereto the arm  $E$ , extended beyond the edge of the case, the loop  $I$ , attached to the arm, a receiver having its connecting-cord passed through the loop, the inward extension  $f$ , the springs  $h^2$ , and  $g'$ , and a call-bell, substantially as and for the purpose specified.

3. The combination of the case  $A$ , having located therein a call-bell, and provided with openings, the L-shaped helical spring  $C$ , secured at one end of the case and its free end provided with the free vibrating diaphragm  $b$ , and the electrode or disk  $K^4$ , secured to the free end of the bar  $A'$ , substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

MANIOUS GARL.

Witnesses:

F. W. BOND,

E. A. C. SMITH.