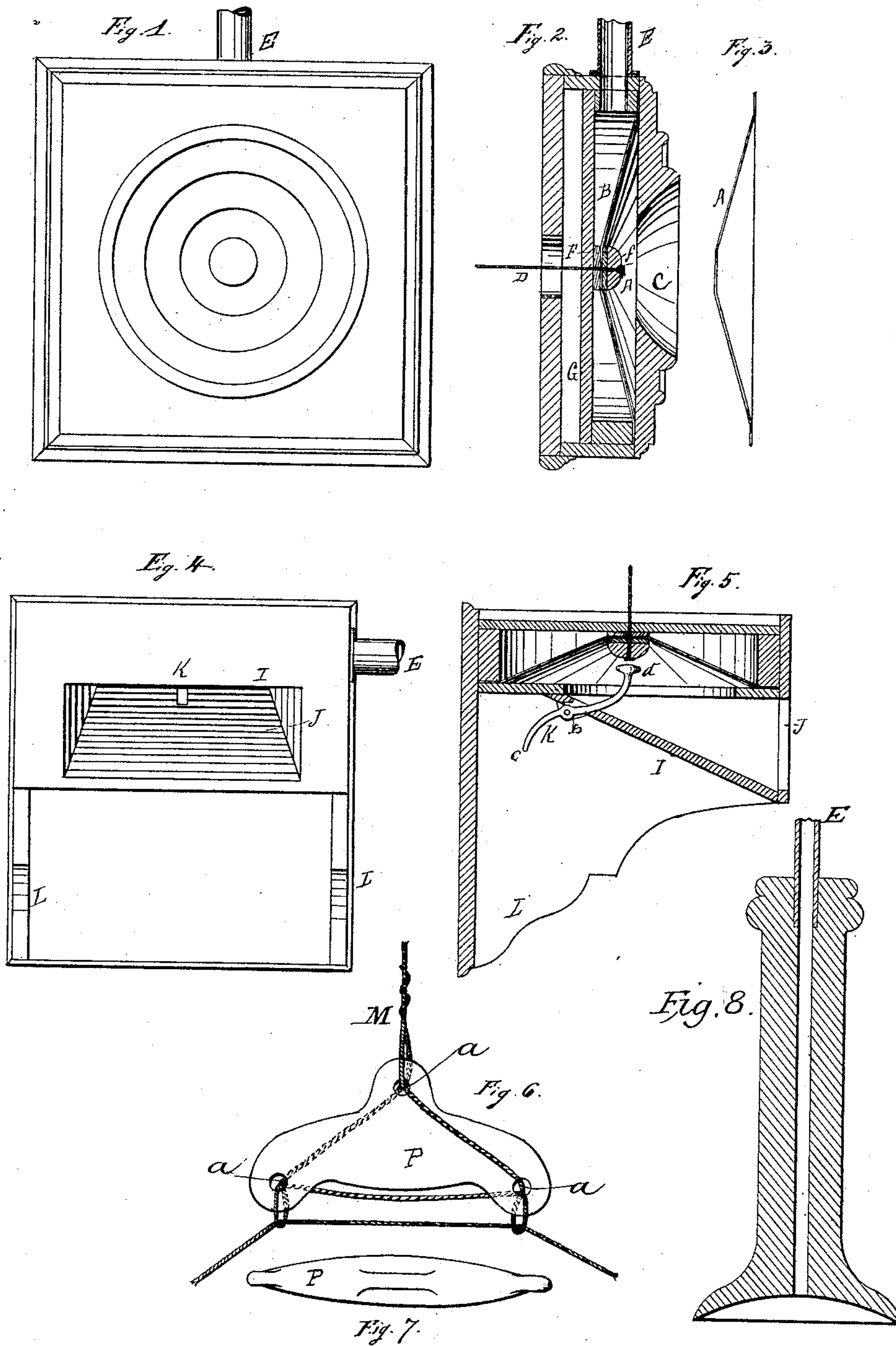


(No Model.)

J. R., J. D. & C. F. HOLCOMB.  
MECHANICAL TELEPHONE.

No. 320,935.

Patented June 30, 1885.



WITNESSES:  
*C. W. Lakin*  
*H. H. Doherty*

*Jas. R. Holcomb,*  
*John D. Holcomb,* INVENTORS,  
*Chas. F. Holcomb,*  
*By Geo. C. Tracy & Co* ATTORNEYS,



# UNITED STATES PATENT OFFICE.

JAMES R. HOLCOMB, JOHN D. HOLCOMB, AND CHARLES F. HOLCOMB, OF  
CLEVELAND, OHIO.

## MECHANICAL TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 320,935, dated June 30, 1885.

Application filed September 3, 1883. (No model.)

*To all whom it may concern:*

Be it known that we, JAS. R. HOLCOMB, JOHN D. HOLCOMB, and CHAS. F. HOLCOMB, of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and Improved Mechanical Telephone; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being made to the accompanying drawings, and to letters of reference marked thereon.

Our invention relates to certain new and useful improvements in telephones or devices for transmitting sounds from one point to another, and has particular reference to that class of such devices known as "mechanical or acoustic telephones," or those in which the repetition of sounds is caused by the vibratory effect of spoken words or other sounds over a wire or equivalent connecting-line between two disks or diaphragms.

Our object is to secure an instrument, which, by reason of its peculiar construction, with its accessories, will be far more efficient for lines of this class than those heretofore made, especially on crooked, angular, or zigzag lines.

A further object of this invention is to provide an improved method and device for supporting or insulating the line-wire in connection with the respective instruments.

It is well known that the use of mechanical telephones has heretofore been confined chiefly to direct or straight lines or those having few obtuse or right angles. Our invention, which consists, essentially, of telephones and insulators, as described, fully overcomes this serious objection, as they have been found to work successfully on lines having seven right angles and two obtuse angles.

In the drawings, Figure 1 is a front view of our improved telephone. Fig. 2 is a transverse section of the same. Fig. 3 is a separate view in same line of view of parchment diaphragm. Figs. 4 and 5 are front and sectional views, respectively, of the telephone set in a different position to allow the line-wire to lead out in a vertical line from the diaphragm, which is sometimes desirable and difficult to accomplish with the instrument in the other position shown. Figs. 6 and 7 are

side and top views, respectively, of the hanger or insulator. Fig. 8 is a sectional view longitudinally through the center of ear-piece connected with chamber B by tube E.

A' is the diaphragm forming, with the straight-back diaphragm G, the conical chamber B, so that when the diaphragm vibrates, in consequence of audible sounds produced at the other end of the line, the sounds will be confined and concentrated within the chamber B, and can be heard through the tube E, which by flexible connection communicates with an ear-piece or receiver connected therewith. A is of parchment or equivalent material, and G of flexible wood of the required degree of thinness to secure resonance, though we do not confine ourselves to any particular material.

C is a mouth-piece for concentrating the volume of the sounds upon the diaphragm. *f* is a call-button, through which the line-wire D passes.

F is a circular piece of leather or other suitable material, about one inch in diameter and one-eighth inch in thickness, for the purpose of separating the two diaphragms, as shown. The diaphragms at their circumference are separated from three-fourths to one and one-fourth inch, and gradually approach through the tension upon the outer one until this rests upon the cushion F, said flexible cushion acting as a damper for correcting excessive vibrations.

The telephone shown in Figs. 4 and 5 is identical with the one just described, except its position in relation to the line-wire, for the purpose hereinbefore mentioned, merely for this purpose having the addition of the sounding-board I arranged as an inclined plane, to direct the voice from the opening J in an upward direction against the diaphragm and concentrate it thereon. A bracket, L L, holds the instrument in position.

The compensating-angle insulator, Figs. 6 and 7, is made of iron or other suitable material in the form shown. It forms a heavy, rigid, and inflexible hanger, being in these essential particulars very different from insulators or supports previously employed. It is provided with eyelets or openings *a a*, through which



the wire suspending the line-wire is passed, as shown, either by direct wires or by the bight of a single wire, as indicated by dotted lines—that is to say, a wire is passed through the upper eyelet from behind; thence to eyelet on the right, through that from front to back, then formed into a loop returning through the same eyelet from front to back; thence to and through eyelet on the left, also from front to back; thence down to form loop, as on the right; thence through same eyelet from front to back; thence to and through from back to front of eyelet at the top; thence upward, uniting with the other end of wire, to form support. It will be seen that this device renders it possible to pass around corners without impairing the vibratory power of the wire. By suspending this insulator at the middle eyelet by the wire M, the device is so pivoted that any vibration from one side is instantly communicated to the other side of the insulator. These insulators have usually been made of about one pound in weight.

By using one conical diaphragm, with a flat or straight diaphragm, we are enabled to secure acoustical effects hitherto impossible with instruments of this class. The normal volume of sound is transmitted without sensible diminution, and delivered with clearness and distinctness, even where two to ten angles are passed by the line-wire.

These improvements enable us to work from two to six or eight instruments on a line, the respective branch lines being spliced to the main line, or being joined together at a com-

mon center, so as to divide the tension of the wires among the different telephones.

K is a hammer for striking the button *f* to “call.” It is pivoted at *b*, and its longer end being heavier than the handle *c*, a number of quick sharp strokes at *c* will strike the head *d* against the button, its gravity bringing it each time back into place.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In an acoustic or mechanical telephone, the combination and arrangement of the conical diaphragm A with the straight diaphragm G and mouth-piece C, substantially as and for the purposes set forth and described.

2. In an acoustic or mechanical telephone, the combination, with two diaphragms, of a flexible hearing-tube, E, arranged to connect the chamber B with an ear-piece, as and for the purposes set forth and described.

3. In an acoustic or mechanical telephone, the combination, with the diaphragm A and diaphragm G, of the inclined sounding-board I and bracket L, as and for the purposes set forth and described.

This specification signed and witnessed this 2d day of August, 1883.

JAMES R. HOLCOMB.

JOHN D. HOLCOMB.

CHARLES F. HOLCOMB.

Witnesses:

GEO. C. TRACY,

JAMES DEEGAN.