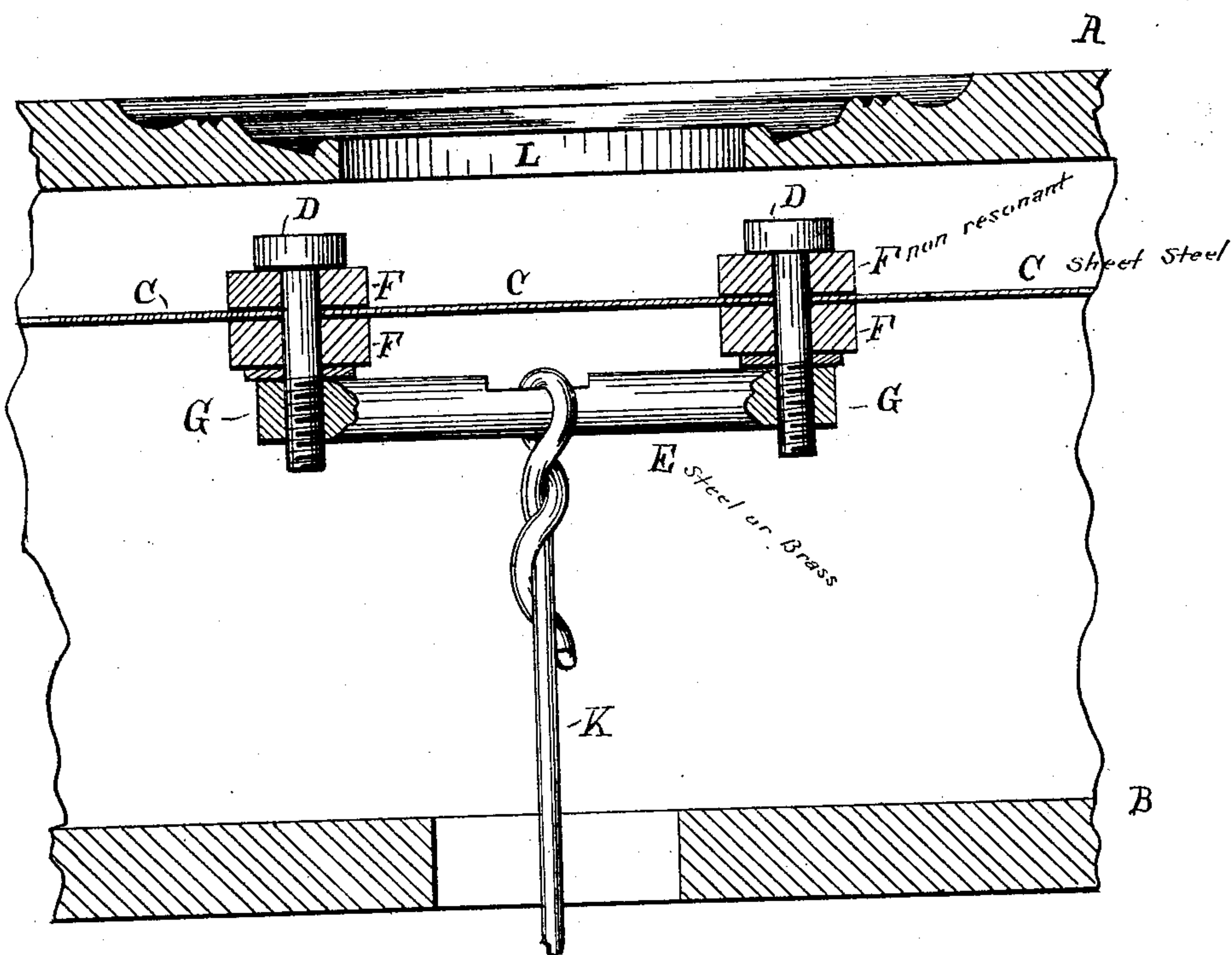


(No Model.)

M. GARL.  
MECHANICAL TELEPHONE.

No. 361,499.

Patented Apr. 19, 1887.



Witnesses

A. C. Barton

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# UNITED STATES PATENT OFFICE.

MANIOUS GARL, OF AKRON, OHIO.

## MECHANICAL TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 361,499, dated April 19, 1887.

Application filed March 24, 1886. Serial No. 196,417. (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  
5 invented a new and useful Improvement in Telephone-Transmitters, (for which I have obtained no patent whatever,) of which the following is a specification.

My invention relates to an improvement in  
10 telephone-transmitters; and the object of my improvement is to secure a clear strong sound, and at the same time strength and durability of the instrument. I attain these objects by the use of the mechanism illustrated in the accompanying drawing, which represents a vertical section of the transmitter-box, and in  
15 which A represents the face of the box, B the back, C the transmitter-plate, D the transmitter-bar posts, E the transmitter-bar, and F washers of any suitable material.

The letter G represents the transmitter-bar broken away to show the method of attachment by means of threads on the bar-posts D.

K represents the transmitting-wire, and L  
25 shows the mouth-piece.

Similar letters refer to similar parts throughout the drawing.

In the transmission of sound the intensity of the sound-wave depends upon the amplitude  
30 of the vibrations of the medium through which the sound is transmitted, and the amplitude of the vibrations of the medium depends, in a great measure, upon its tension and elasticity. Consequently, in the construction of a non-  
35 electric telephone, it is desirable to have all attachments as delicate as possible, so that the elasticity will not be impaired; but the proper tension must be secured or the instrument will be useless.

The great difficulty experienced with non-  
40 electric telephones now in use is, that when the instrument is put up to work at any considerable distance the weight of the wire, together with the necessary tension, produces such a strain upon the transmitter-plate as to either  
45 break it, tear it out of the box, force the button (with which the transmitter-wire is usually attached to the transmitter-plate) through the plate, or draw upon the plate so that it cannot  
50 properly vibrate. I claim to avoid all of these objectionable features by the use of my invention.

In the drawing it will be observed that the transmitter-wire K is not directly attached to the transmitter-plate C, but is first attached to  
55 the transmitter-bar E. The wire may be attached to the bar by simply doubling over it, as shown; or the bar may be perforated and the wire soldered in or headed upon one side. I prefer to fasten the wire as shown in the  
60 drawing, for the reason that by so doing any sized wire may be used, which might not be done if the wire be fastened by passing it through a hole in the bar. The bar may be made of any suitable substance, preferably of  
65 steel or brass. The bar is attached to the transmitter-plate C by the bar-posts D, passing through the plate and screwing into the bar, as shown at G, where the bar is broken away.

The washers F simply serve to prevent direct contact of the heads of the bar-posts and  
70 the transmitter-bar with the transmitter-plate; but I make no claim to them as my invention. These washers may be made of any non-resonant substance, preferably of cork.

The receiving-wire (not shown in the drawing) may be attached to the bar in any desired  
75 manner. I have found it expedient to split it into two parts and attach the parts to the bar at two places, midway between the points of contact of the bar-posts D and the transmitter-  
80 wire K, with the bar E, by soldering the wire into holes in the bar at such points; but this is not absolutely necessary, and so I do not claim it as any part of my invention.

For the transmitter-plate C, I use a piece of  
85 sheet-steel, instead of the type-metal commonly used.

I claim that my invention is an improvement upon other transmitters in the following  
90 particulars:

First. By using the bar E the strain upon the transmitter-plate C is divided and distributed. This allows a greater weight of wire and a greater tension than if the wire be  
95 attached directly by one button to the center of the plate, as is the universal method in old transmitters.

Second. The leverage upon the plate is materially decreased by the weight being applied  
100 at points distant from the center.

Third. By the use of the bar E the center of the plate is left free, and therefore can and does more readily receive and transmit vibra-



tions than if the wire be attached directly to the center of the plate. This arrangement prevents the usual injuries to the plate before mentioned.

5 If a round transmitter-plate be used in connection with the bar and posts, it will be observed that the distance from either of the bar-  
posts to the edge of the plate, measured on a  
line drawn through the posts, will be much  
10 shorter than the distance from the center of the bar to either of the other edges of the plate. I have found by experience that this is not the best arrangement, as, for some reason, this  
unequal distribution of the strain on a round  
15 plate seems to impair the clearness of the instrument. I prefer, therefore, to use a rectangular plate, so constructed that when the bar-  
posts are placed upon a line drawn through  
the center of the plate and at points equally  
20 distant from that center the distance from either of the posts to the edge of the plate, measured upon that line, shall be the same as

the distance measured from the center of the plate to either of the other edges. This shape of the plate completely avoids the difficulty 25 before mentioned. However, I do not claim anything for the shape of the plate, and only mention it to fully explain the best method of constructing the plate in connection with my invention; but 30

What I do claim as my invention, and desire to secure by Letters Patent, is—

In combination with the diaphragm of a mechanical telephone, the transmitter-bar E, having screw-threaded perforations at each end, 35 the screw-threaded transmitter-bar posts D, engaging said transmitter-bar, and the non-resonant washers F, arranged upon said transmitter-bar posts, all substantially as described.

MANIOUS GARL.

Witnesses:

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CHESTER S. ROWAN.