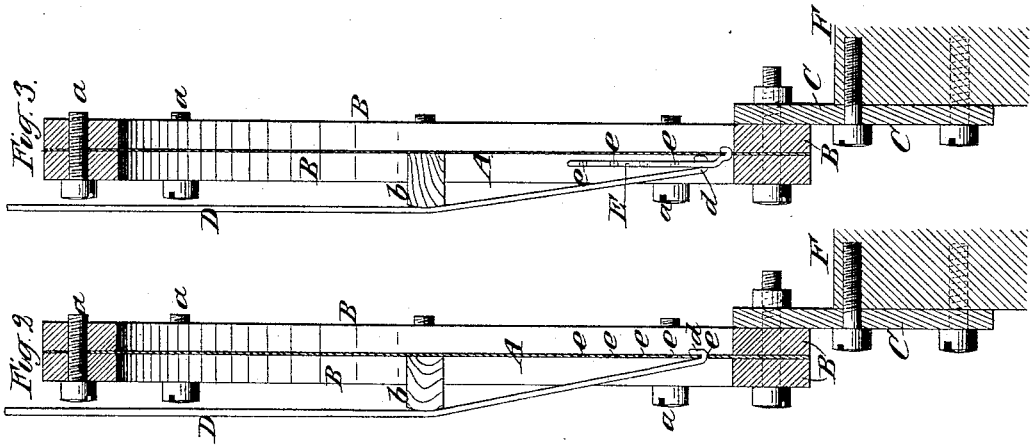
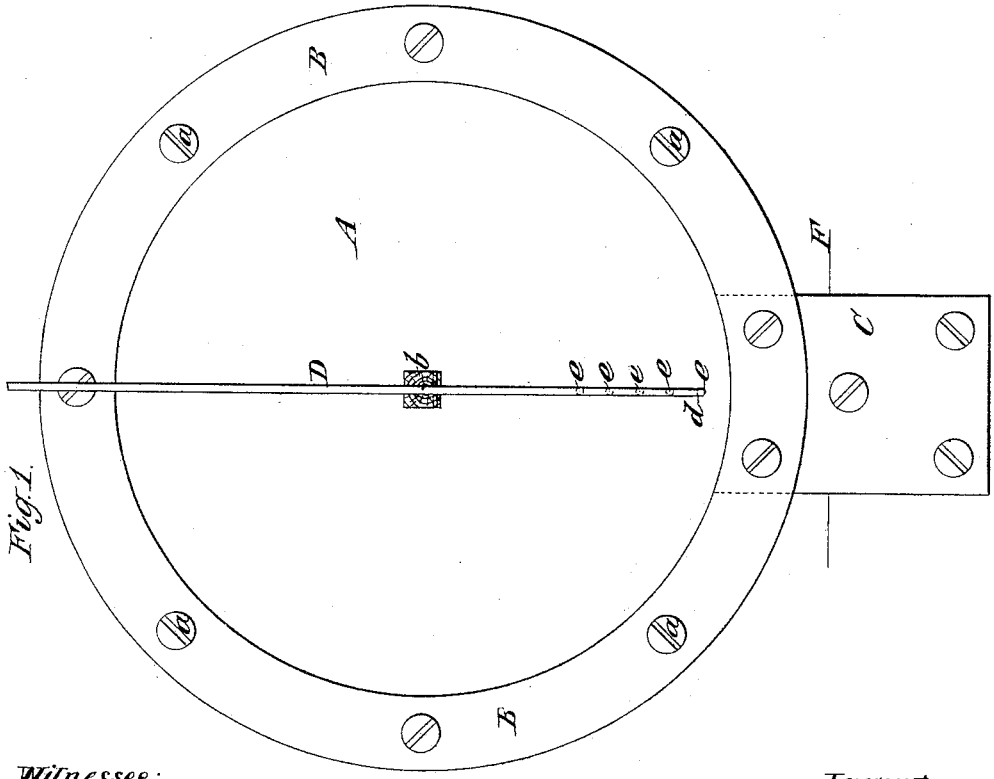
(No Model.)

A. W. HALL.

MECHANICAL TELEPHONE.

No. 386,980. Patented July 31, 1888.





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UNITED STATES PATENT OFFICE.

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MECHANICAL TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 386,980, dated July 31, 1888.

Application filed September 28, 1887. Serial No. 250,933. (No model.)

To all whom it may concern:

Be it known that I, A. WILFORD HALL, a citizen of the United States, residing in the city and county of New York, in the State of New York, have invented a new and useful Improvement in Mechanical Telephones, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The object of this invention is to increase the efficiency of mechanical telephones; and to this end one feature of my invention consists in a mechanical telephone having the wire or string situated in front of and arranged across the diaphragms, so that in speaking to the telephone the voice strikes not only the diaphragm, but the wire or string, and the vibration of the latter is increased.

Another feature of my invention consists in the combination, with the wire or string, the diaphragm, and the support provided for the wire or string at or near the center of the diaphragm, of an adjustable connection for the adjacent end of the wire or string, whereby the distance between the said support and the said end of the wire or string may be varied and adjusted to obtain the most effective vibration.

Figure 1 is a face view of a mechanical-telephone instrument with my improvements. Fig. 2 is a central vertical section of the same. Fig. 3 is a central sectional view illustrating a slight modification.

Similar letters of reference indicate corresponding parts in the several figures.

A designates the diaphragm, of thin steel or other plate, clamped at its margin by means of screws *a a* between two metal rings, B B, which are firmly secured to a small metal post or bracket, C, to be attached to the wall of a building or to any suitable fixed support, F.

D designates the wire or string, which is arranged in front of the diaphragm, and the end of which is connected with the diaphragm near the margin or distant from the center thereof, and which is supported on the central part of the diaphragm, preferably exactly in the center thereof, by a small post or stud, *b*, which may be of wood or other suitable material.

In Figs. 1 and 2 the end of the wire or string, which is shown as provided with a hook, *d*, is hitched into one of a series of holes, *e e*, which are provided in the diaphragm at different distances from the center thereof.

In Fig. 3 the end of the wire or string is also shown hooked; but instead of being shown hitched directly to the diaphragm it is shown attached thereto by being hitched into one of a series of holes, *e e*, in a small plate, E, which is shown as permanently secured to the diaphragm near the margin thereof, the said plate being so arranged that the holes *e e* provided in it are at different distances from the center of the diaphragm.

It will be observed that the portion of the wire or string between the post or bearing *b* and hooked end *d*, which is connected with the diaphragm, is diagonal to the diaphragm, and the portion of the wire or string D beyond the post or bearing *b*. This enables a proper pressure of the wire or string to be produced on the diaphragm to insure its vibration with the diaphragm.

The proper distance between the bearing *b* and the point *d* of attachment of the wire or string to the diaphragm will depend in some degree on the length of that portion of the wire or string between the said bearing *b* and the next fixed support for the wire or string beyond the telephone-instrument; but it will in some degree depend on the flexibility of the diaphragm. The said distance may, however, be determined by trying the wire or string in different holes *e* to ascertain by the sound produced by talking against the diaphragm which distance gives the best effect.

The hitching-point of the hook *d* in one of the holes *e* of the diaphragm or the attachment of the plate E to the diaphragm being so far from the center of the diaphragm and so near where the diaphragm is supported and sustained by the clamping-rings, and the longitudinal pull of the wire or string on the diaphragm being so nearly parallel with the diaphragm, the latter may, without danger of disruption, be made so thin that its vibration will be very free, and it will be very sensitive to sound-vibrations. The diaphragm might, however, be strengthened at the holes or parts of attachment *e e* by fitting the said holes with metallic eyelets.

By the placing of the wire or string in front

of the diaphragm, where the voice of the speaker will strike it as well as the diaphragm, instead of placing it behind the diaphragm, where it is shut off from the speaker by the diaphragm, I am enabled to obtain a greater or more effective vibration of the wire or string, and the efficiency of the telephone is increased.

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

1. The combination, in a mechanical telephone, of a diaphragm, a wire or string placed in front of and across the diaphragm, and a bearing or support for the said wire or string upon the diaphragm at or near the center of the latter, substantially as and for the purpose herein set forth.

2. The combination, with the diaphragm and the wire or string attached thereto at a point distant from the center thereof and the support for the wire or string at or near the center of the diaphragm, of means, substantially as herein described, of adjusting or varying the said point of attachment, for the purpose herein set forth.

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