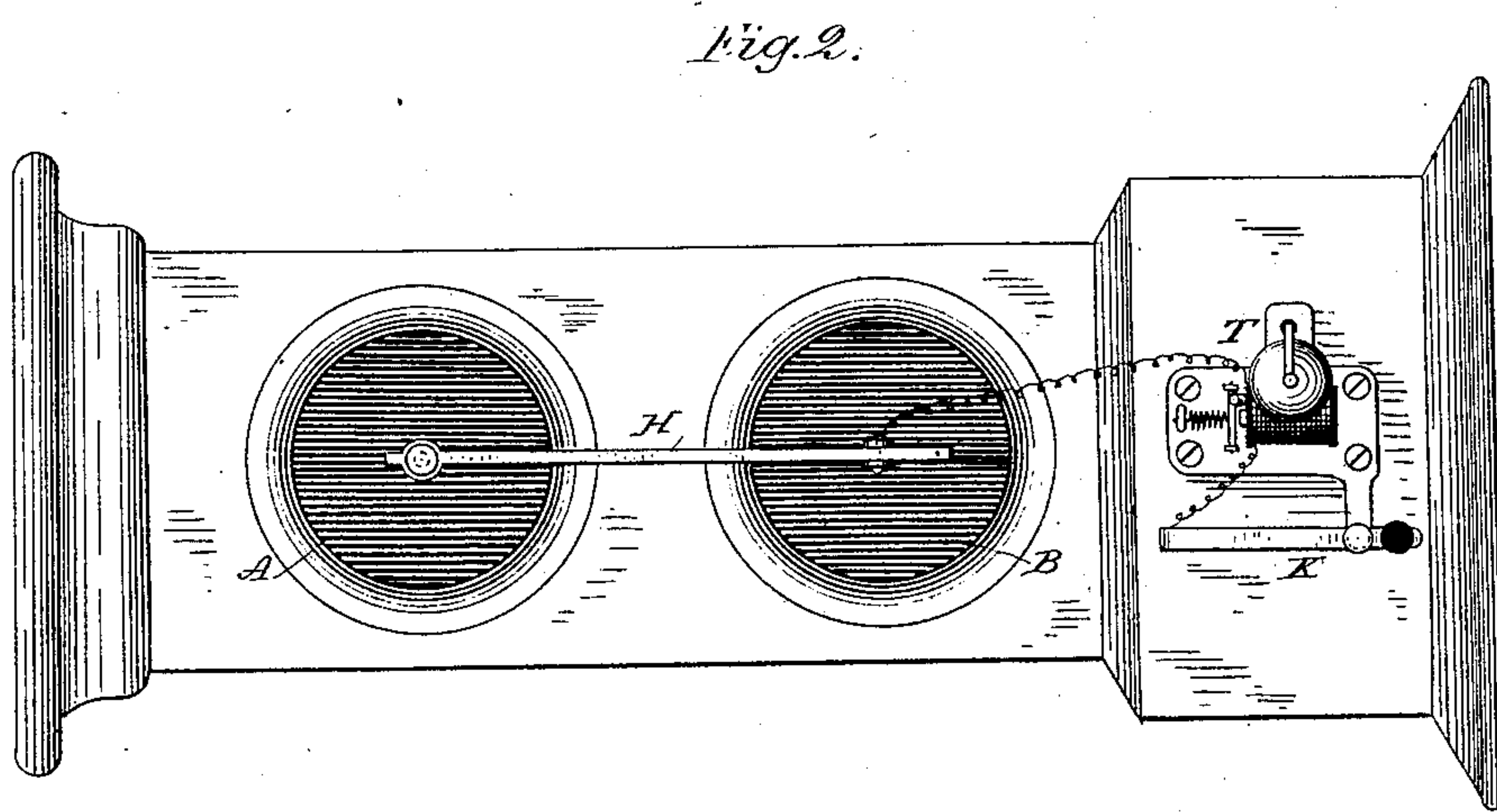
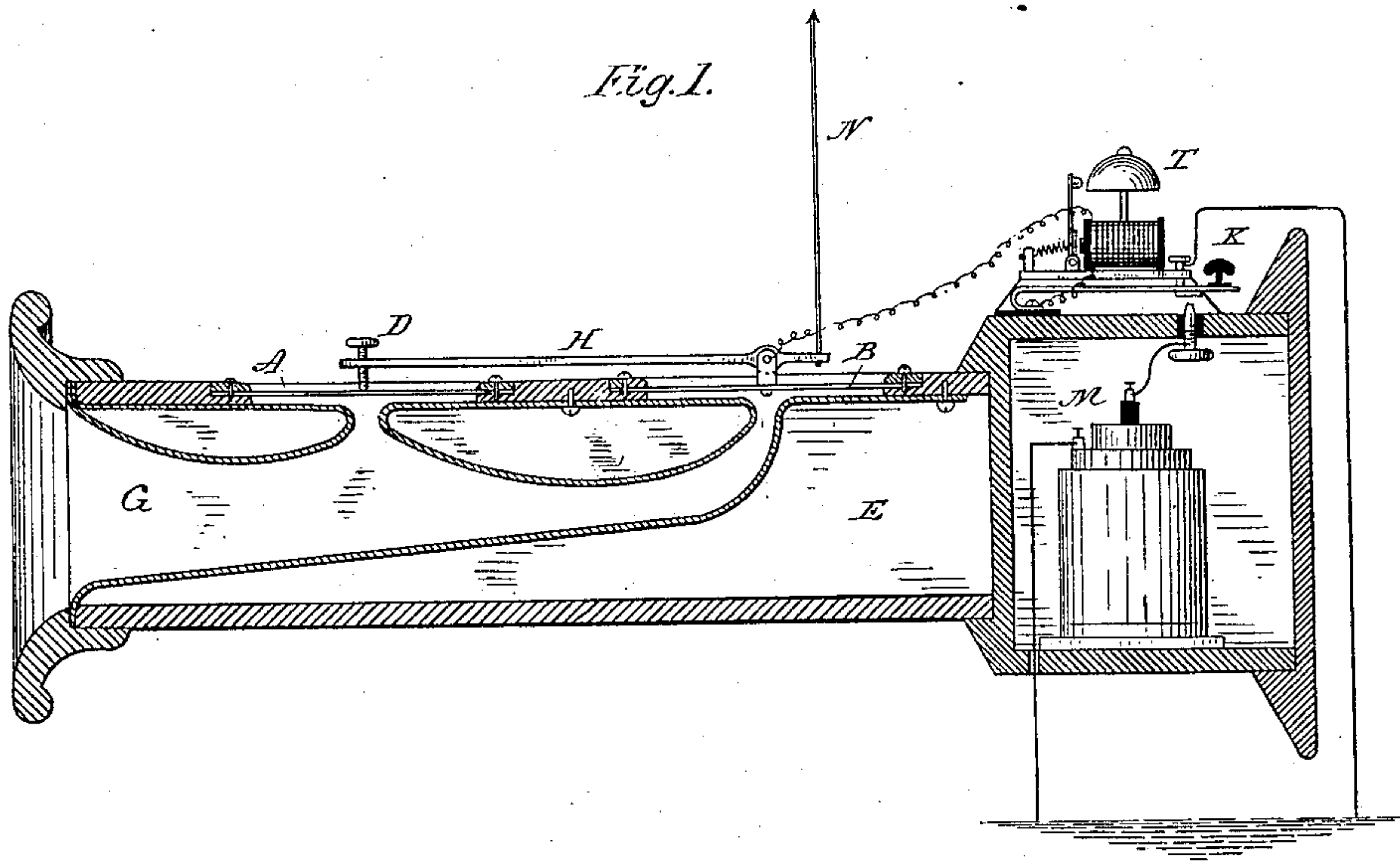


(No Model.)

C. SELDEN.  
ACOUSTIC TELEPHONE.

No. 281,407.

Patented July 17, 1883.



Witnesses:  
Ernest Abshagen  
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# UNITED STATES PATENT OFFICE.

CHARLES SELDEN, OF ST. LOUIS, MISSOURI.

## ACOUSTIC TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 281,407, dated July 17, 1883.

Application filed April 2, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES SELDEN, a citizen of the United States, and a resident of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Acoustic Telephones, of which the following is a specification.

My invention relates to that class of telephones in which speech and sound are transmitted by mechanical vibrations through a cord, rod, or its equivalent, mechanically connecting two diaphragms or other vibratory surfaces, placed, respectively, at the points between which communication is desired. I have found by experiment that where a long line is used in this kind of telephonic communication, and the line is strung to high tension, the weight or tension of the line puts such a strain on the diaphragm and makes it so rigid as to interfere seriously with the proper transmission and reception of speech.

One of the objects of my invention is to remove this difficulty; and to this end my invention consists in interposing between the line and the diaphragm a lever or equivalent mechanical device, which acts to reduce the strain of the line that is exerted upon the diaphragm, the line for this purpose being attached to the shorter arm of the lever, while the longer arm thereof is connected with the diaphragm. Such an arrangement improves the action of the apparatus both in the transmission and reception of speech—in the first instance because the diaphragm is allowed freer and more unrestrained movement, its vibrations being, nevertheless, properly communicated to the line, and in the second instance because the vibrations of the line are communicated with an increased amplitude to the diaphragm, while at the same time the weight or strain of the line is not so great on said diaphragm.

The object of my invention is also to still further increase the efficiency of the device by the peculiar construction herein described, which consists, essentially, in mounting the lever or its equivalent upon a second-diaphragm, which is affected simultaneously with the first and adds its effects to those of the first.

My invention further consists in certain improvements in details of construction, that will be specified in the claims.

In the accompanying drawings, Figure 1 is a longitudinal section of an apparatus embodying my invention, and Fig. 2 is a top view thereof.

E indicates a box or case, preferably made of cast-iron, although any other suitable material may be used. At one end of said box there is a compartment, M, containing a galvanic battery, or other source or reservoir of electricity, to be used for signaling purposes, one pole of said battery being connected, as indicated, with the ground, while the other is connected to the normally-open contact of a two-point key, K, said key itself being connected with the line N through an electro-magnetic signal-bell, T, of the usual construction, and the pivot of a lever, H, which latter is itself in electrical connection with the line. The normally-closed or upper contact of the key K is connected with the ground, as indicated, so that the bell is normally in circuit and ready for a signal from the distant station, while, if the key be depressed, the battery is connected to the line, and the bell at the distant station is operated. The apparatus at both stations is substantially the same, and the line mechanically connecting the two speaking apparatus should be a conductor or contain a conductor of electricity.

G indicates a sound-chamber into which the voice of the speaker is projected, provided by preference with two sound-directing openings, one of which directs the sound-vibrations onto a diaphragm, A, and the other onto a diaphragm, B, suitably mounted.

H is a lever which rests at its longer end upon a diaphragm, A, and is connected at its shorter end to the line N, by which the vibrations are communicated to and from the diaphragm to a distant instrument.

D is an adjustable screw or other adjustable device which impinges against the diaphragm A, and serves to adjust the strain of the line N thereupon.

The pivotal support of lever H may be placed in any desired location, although I prefer to mount such fulcrum or support on a second diaphragm, B, which is affected simultaneously with A, and serves in a measure to increase the vibrations upon the line when the apparatus is spoken into. The arrangement



of the lever shown reduces the strain on diaphragm A and produces the advantages hereinbefore set forth. The lever itself is of metal, and is electrically connected with the line N; or it may support a conductor leading from its fulcrum to the point of attachment of the line, thus completing the circuit between the bell T and the line. This arrangement for making connection between the line and the signaling apparatus obviates any interference with the vibrations of the line that might otherwise result from such connection.

I do not limit myself to the position of the fulcrum for lever H or its equivalent, as such lever may be supported by other devices than a second diaphragm, such diaphragm being then dispensed with. Other mechanical devices might be employed in place of the lever for reducing the strain on the diaphragm, while at the same time allowing mechanical vibrations to be communicated to it; but the lever is the simplest and most feasible device for the purpose.

What I claim as my invention is—

1. The combination, with an acoustic or mechanical telephone, of mechanism interposed between the line and diaphragm for communicating vibrations to the latter, and arranged to give to the diaphragm the mechanical advantage in the strain or pull between them, as described, whereby the strain of the line upon the diaphragm may be reduced.

2. The combination, in an acoustic or mechanical telephone apparatus, of a diaphragm or equivalent vibratory surface, a lever, the longer arm of which is connected to the diaphragm, and a line-wire connected with the shorter arm of said lever.

3. The combination, with a diaphragm in

an acoustic or mechanical telephone apparatus, of a lever, one arm of which rests upon said diaphragm, with an adjustable impinging point, while its other arm is connected with the line-wire.

4. The combination, with the diaphragm, of the lever H, line N, and adjustable point D, resting on the diaphragm.

5. The combination, with the diaphragm or equivalent vibratory surface in an acoustic or mechanical telephone, of a lever interposed between said diaphragm and the line, and a second diaphragm upon which said lever is fulcrumed.

6. The combination of a line, N, two diaphragms, and a lever supported on one of said diaphragms, and connected at its shorter end with the line, while its longer arm impinges against the second diaphragm.

7. The combination of the two diaphragms, the common sound-directing chamber, and a lever resting on one of said diaphragms, and connected at its two ends, respectively, with the line and with the other diaphragm.

8. The combination, with the diaphragm, the line-wire, and the interposed lever, of the electrical signaling apparatus connected with said line through the fulcrum of the lever.

9. The combination of the case E, provided with the battery-compartment M, and the sound-chamber G, having openings directed toward the diaphragms A and B.

Signed at St. Louis, in the State of Missouri, this 21st day of March, A. D. 1883.

CHARLES SELDEN.

Witnesses:

FRANK CONROY,  
JOS. H. HAMILL.