

(No Model.)

C. L. FORTIER.
TELEPHONE RECEIVER.

No. 323,311.

Patented July 28, 1885.

Fig. 1.

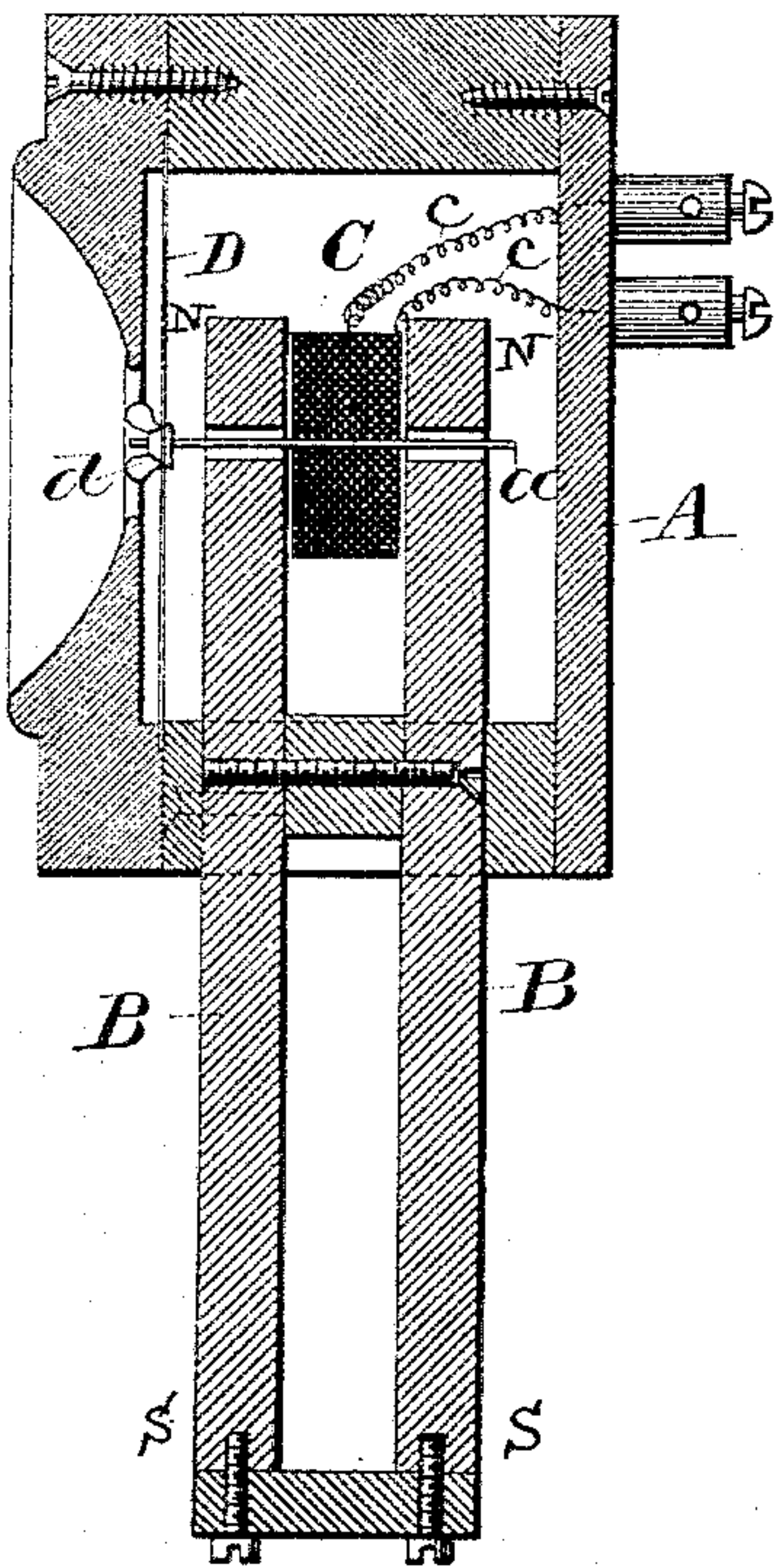


Fig. 2.

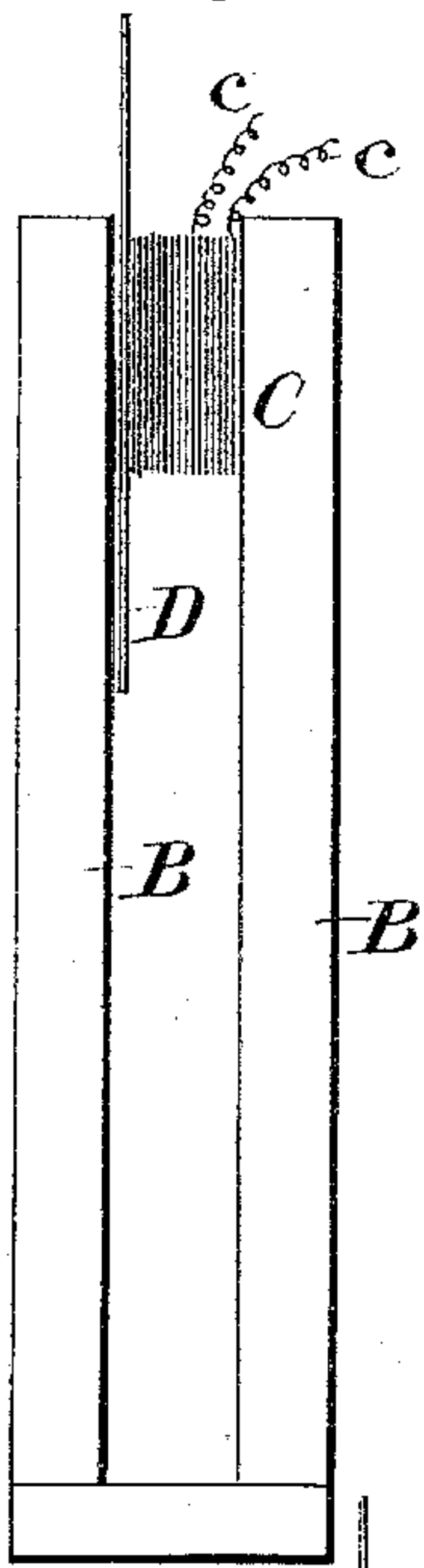


Fig. 3.

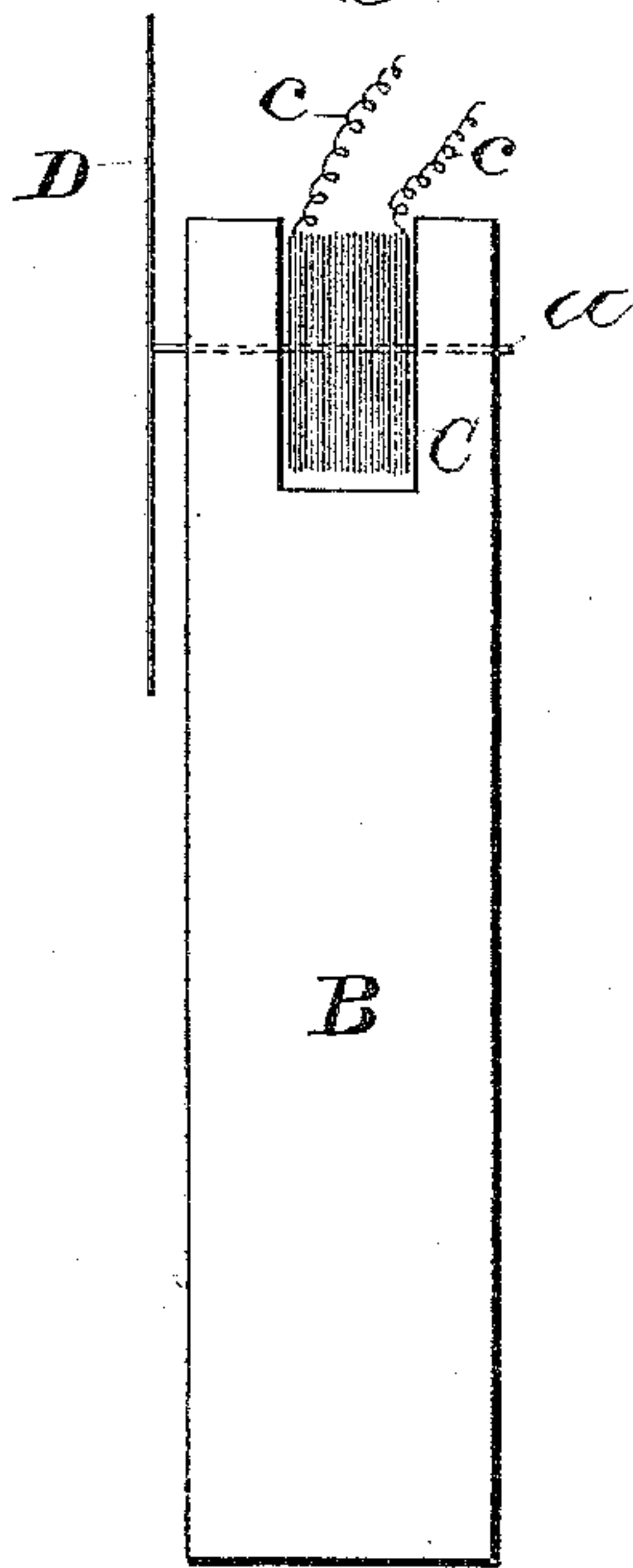
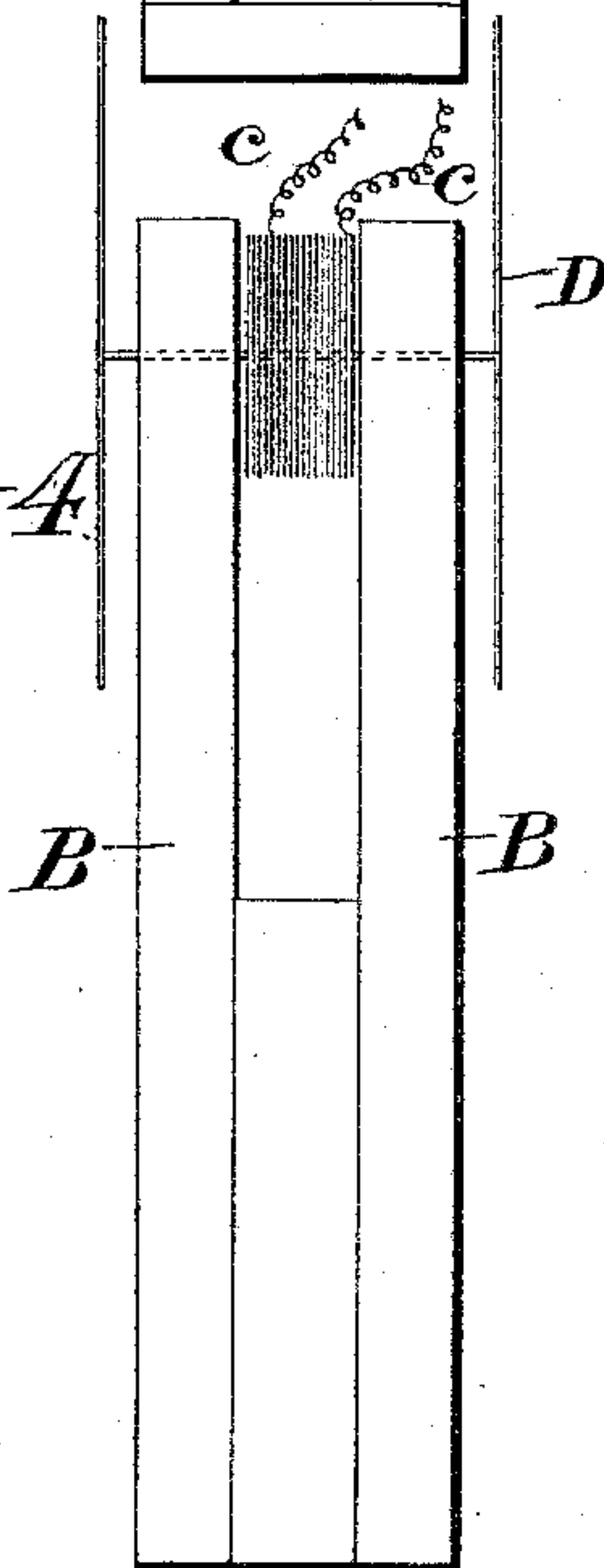


Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES L. FORTIER, OF MILWAUKEE, WISCONSIN.

TELEPHONE-RECEIVER.

SPECIFICATION forming part of Letters Patent No. 323,311, dated July 28, 1885.

Application filed July 15, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. FORTIER, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Telephone-Receivers; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to telephones, and will be fully described hereinafter.

Figure 1 is a vertical section of my device, and Figs. 2, 3, and 4 are details of modifications of the same.

A is the casing of a telephone-receiver, and B B are two magnets, which are magnetically insulated from each other, as shown in Fig. 1; or, instead of two magnets, I may use a single magnet, as shown in Fig. 3, with a bifurcated end.

C is a helix or coil arranged between the upper ends of the magnets B B, and connected rigidly with the diaphragm D by a non-magnetic wire, *a*. This wire *a* passes loosely through holes in the upper ends of the magnets, and the helix or coil may be wound directly upon it or upon an interposed core of soft iron. Both magnets have the same polarity at their ends adjacent to the helix—that is, both may be either north or both south. The ends *c c* of the helix or coil are connected to line in the usual manner.

The operation of my improved receiver is as follows: The helix or coil is suspended between the two magnets or magnetic arms by a support that connects it rigidly with the diaphragm. Now, when a current comes from the transmitter in one direction, it polarizes the helix, giving to one end a south polarity and the other a north polarity, and as both magnets have the same polarity that end of the helix that has a like polarity to its adjacent magnet will be repelled by it, and that which has opposite polarity to its adjacent magnet will be attracted, and as the helix or coil is vibrated by these attractions and re-

pulsions acting together corresponding vibrations will be imparted to the diaphragm, this action being reversed by a current through the helix or coil in an opposite direction.

It is immaterial whether the helix be supported (as it is in Fig. 1 of the drawings) by a single diaphragm that is situated at one side of the magnets, or the diaphragm be placed between the two magnets and in close contact with the helix, or the helix or coil be supported on a rod or wire attached at each end to a diaphragm, as the essential feature of my invention consists solely in suspending the helix or coil between two magnets or magnetic arms of like polarity, and connecting it with the diaphragm.

The wire *a* may be either attached permanently to the diaphragm or may pass through it and be adjustably secured to it by a binding-nut, *d*.

The diaphragm used with my improvement need not be of a material subject to magnetic attraction, but may be of any substance of a flexible and resonant nature.

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

1. In a telephone-receiver, the combination, with a diaphragm, of a coil connected with it and two magnets, the coils being placed axially between the two like poles of said magnets, as set forth.

2. In a telephone-receiver, the combination, with two magnetic arms of a like polarity, of a helix or coil suspended between them and a diaphragm connected with the helix.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

CHAS. L. FORTIER.

Witnesses:

WARREN S. JOHNSON,
S. S. STOUT.